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AUDIT COMMITTEES AND FINANCIAL REPORTING QUALITY

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ABSTRACT

This thesis examines the impact of audit committee characteristics on financial reporting quality in the context of a large sample of UK companies over the period 2007-2010. The notion of financial reporting quality is assessed by looking at the audit quality and earnings quality of the firms. This study utilises the audit fee and non-audit fee ratio as its proxies for audit quality and accruals based earnings management models as its proxies for earnings quality. The findings from the multivariate analysis show that audit committee meetings and financial expertise exert a significant positive impact on audit fees. Investigating expertise further, this study finds no support for the notion that accounting expertise influences audit fees, however a significant positive influence on audit fees is recorded for the non-accounting financial expertise. However, the holding of additional directorships has a significant negative impact on audit fees. This study also finds that audit committee members' financial expertise has a negative and significant impact on non-audit fee ratio suggesting a strong support of members with financial expertise on issues relating to auditor independence. The study also documents that audit committee members serving longer on the boards do not prefer to purchase high amount of non-audit services from the incumbent auditor. This study also records a significant positive impact of the holding of additional directorships on the provision of non-audit fee ratio, thus signifying a profound support for the busyness hypothesis which argues that overstretched directors are not very good monitors of financial reporting quality.

Furthermore, this study finds broadly consistent evidence that audit committees meeting three or more times per year and fully independent audit committees exert a significant positive impact on the quality of reported earnings. This study also finds some evidence (depending on the earnings model used) that the level of ownership of audit committee members also exerts a positive impact on the quality of reported earnings, highlighting the fact that audit committee members with an equity stake in their companies are considered more effective in their oversight of the financial reporting process. On the other hand, this study finds evidence that the busyness of

audit committee members (busyness defined in terms of the holding of board seats in other companies) has a significant negative impact on the quality of reported earnings. The composite variables (i.e. ACE1, ACE2, ACE3 and ACE4) representing those companies that satisfy all aspects of current best practice in terms of audit committee composition and operation, has a positive impact on the quality of reported earnings.

This study covers the period 2007 to 2010 and therefore offers a contemporary analysis of the influence of audit committee characteristics on financial reporting quality. The study is very comprehensive in its scope not only in the selection of audit committee characteristics and methods employed to quantify these characteristics, but also in the use of various proxies developed to capture the true essence of financial reporting quality. The choice of multiple measurement methods both for the dependent and independent variables facilitates a much richer investigation into the relationship between governance and financial reporting quality variables. Therefore this study makes a major contribution to our understanding of the association between the various audit committee characteristics and financial reporting quality in the wake of recently introduced regulatory recommendations. These findings will also have policy implications as regulators around the world continue to define and refine the desired characteristics and behaviour of audit committees. Therefore, the findings of this study will ensure future policy changes regarding audit committees are adequately informed.

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CHAPTER 1: INTRODUCTION

1.0 Introduction

This chapter provides an introduction to this research thesis. It begins by discussing the development and role of audit committees in the current corporate governance environment. Section two outlines the motivation for this study, including a discussion of the study's main aim as well as a summary of the specific research objectives the study seeks to address. Section three presents an explanation of the contribution this research makes to our understanding of the governance role of audit committees. Section four summarises the research methodology being used, including a discussion of the sample and some of the key variables used in the subsequent analysis. The final section of this chapter presents an overview of the structure of the thesis.

1.1 The Development and Governance Role of Audit Committees

The audit committee is defined as "a committee established by and amongst the board of directors of an issuer for the purpose of overseeing the accounting and financial reporting processes of the issuer and audits of the financial statements of the issuer" (SOX Act, 2002, p29). It forms part of the governance structure of a company and is arguably the most important and challenging sub-committee of any company's board of directors. It is seen as a guardian of a company's financial integrity (Rezaee, 2005) and "has the potential to improve the quality of financial reporting by reviewing the financial statements on behalf of the board" (Cadbury, 1992, p67). As noted by Collier (1996) and Fichtner (2010), among others, the origin of audit committees can be traced back to the aftermath of the McKesson & Robbins Inc. fraud in the late 1930s when the New York Stock Exchange (NYSE) and the Securities and Exchange Commission (SEC) recommended that external auditors should be selected by a special committee composed of non-officer board members. Interest in audit committees was revived in the 1970s, when a series of corporate failures motivated regulators in the US to recommend that listed firms should possess an independent audit committee. Indeed, Sommer (1991) cites a 1989 Korn/Ferry International survey of boards of directors which found that 97.7% of responding companies had an audit committee. By 1977, the NYSE required all listed companies to possess an audit committee. Over

the next 20 years or so a number of other commissions in the US sought to further reinforce the quality of audit committees but, importantly, without recourse to legislation. However, this was to change in the aftermath of the Enron collapse in 2001.

The history of audit committees in the UK is a much more recent phenomenon. Collier (1996) points out that audit committees were virtually non-existent prior to 1979 and only began to be formed in earnest in the early 1990s, not least as a result of the Cadbury Committee (1992), which recommended that all listed companies establish 'properly constituted audit committees as an important step in raising standards of corporate governance' (p29). The central component of Cadbury's appropriate test was that audit committees should comprise a minimum of three non-executives. In the years immediately following the Cadbury Committee (1992) recommendations, virtually all UK-listed companies established audit committees, and in a subsequent report of compliance the Cadbury Committee (1995) showed widespread compliance with the original recommendations. Therefore, by the end of the 1990s, both the US and the UK had in place a system of regulation whereby listed companies were expected to possess independent audit committees. However, the dramatic failure of Enron in the US in 2001, despite the presence of a significant level of audit committee self-regulation, forced a re-think on the part of regulators and governments, not only in the US and UK, but throughout the developed world (Fichtner, 2010).

The failure of Enron in 2001 initiated a significant amount of additional audit committee regulation both in the US and elsewhere. In the US, the most obvious response was the Sarbanes-Oxley Act (US House of Representatives, Committee on Financial Services 2002), which focused on 'the protection of investors and consequent restoration of confidence in the nation's financial markets' (Elson and Gyves 2003, p. 10). A key mechanism provided by the Act in pursuit of this objective was the creation of invigorated audit committees. Specifically, SOX requires that every public company's audit committee be composed of independent directors and at least one member must, either through education or experience, qualify as a financial expert. The audit committee is also responsible for determining the level of non-audit services provided by the external auditor and is directly responsible for the hiring, fee negotiation and

general oversight of the external auditing process. Finally, the audit committee is required to provide procedures through which an employee is able to report questionable accounting or auditing matters. In the UK, the response was the establishment of the Smith Review (Smith Committee 2003) which provided a detailed set of recommendations for improving the governance role of audit committees[1], and these were subsequently included in the revised version of the Combined Code published in 2003. Importantly, the UK response was not legislative, but continued the tradition of self-regulation, which has been a hallmark of UK governance for the past 20 years, whereby listed companies are encouraged to comply with the recommendations of the Combined Code, but are also at liberty not to do so, provided an appropriate explanation is provided in the annual report. The similarities with SOX are striking though in that the Smith Report (Smith Committee, 2003) recommendations include the suggestion that all audit committee members should be independent directors; at least one of whom should have recent and relevant financial experience; the audit committee should have primary responsibility for all aspects of the company's relationship with the external auditors; the committee should make an annual report to shareholders, to include an explanation as to how the auditor's objectivity and independence is maintained in cases where the auditor is also employed to provide non-audit services to the company. However, the Smith Report (2003) also included greater prescription than previously with recommendations that: there should be at least three members (two in the case of smaller companies); members should not serve for more than two three-year terms; and there should be a minimum of three meetings per year.

Subsequent revisions of the Combined Code in 2006 and 2008 as well as the UK Corporate Governance Code (Financial Reporting Council 2010) have essentially carried forward the existing recommendations for audit committees as suggested by the Smith Report (Smith Committee, 2003). It should also be noted that similar regulatory

[1] The main role and responsibilities of an audit committee should be to: monitor the integrity of the financial statements of the company; monitor and review the effectiveness of the company's internal audit function; make recommendations in relation to the appointment and remuneration of the external auditor; monitor the external auditor's independence and effectiveness; develop and implement policy with regards to the supply of non-audit services by the external auditor (Smith Committee 2003).

initiatives were introduced in many other countries. For example, Australia, New Zealand, Spain, Singapore and China all now require audit committees to have a majority of independent members, possess an independent chair, possess at least one financial expert, be responsible for the selection, appointment and removal of the external auditor and review the effectiveness of the internal audit function. Further information on the audit committee requirements of selected countries is included in Table 1.1.

Table 1.1 - Overview of Audit Committee Requirements: International Comparison

Overview of Audit Committee Requirements: International Comparison							
Feature	**U.S.**	**U.K.**	**Australia**	**New Zealand**	**Spain**	**Singapore**	**China**
Regulation	Sarbanes-Oxley act (U.S House of representatives, Committee on financial Services 2002)	The UK Corporate Governance Code (U.K. Financial Reporting Council 2010)	The Australian stock exchange Corporate Governance Principles and recommendations with 2010 amendments (ASX 2010)	New Zealand Securities Commission (2004): Corporate Governance in New Zealand: Principles and Guidelines	Unified Code on Good Corporate Governance (Spanish Securities Market Commission 2006)	The Singapore Code of Corporate Governance (Singapore Council on Corporate Disclosure and Governance 2005)	China Securities Regulatory Commission: Code of Corporate Governance for Listed Companies in China (China Securities Regulatory Commission 2007)
Formation	Mandated by law and listing rules	Voluntary "comply or explain" approach*	Voluntary "comply or explain" approach	Voluntary "comply or explain" approach	Voluntary "comply or explain" approach	Voluntary "comply or explain" approach	Voluntary
Composition	All directors must be independent	Recommends at least three directors be independent	Recommends all directors be nonexecutive Recommends majority independence Recommends independent chair who is not chair of the board	Recommends all directors be nonexecutive Recommends majority independence Recommends independent chair who is not chair of the board	Recommends all directors be nonexecutive Recommends majority independence Recommends independent chair	Recommends all directors be nonexecutive Recommends majority independence Recommends independent chair	Recommends audit committee comprise solely of directors Recommends majority independence Recommends independent chair
Financial expert	One expert, must be independent	Recommends one expert, need not be independent	Recommends at least one expert, need not be independent	Recommends at least one expert, need not be independent	Recommends all members possess accounting, finance and management knowledge and experience	Recommends at least two experts, preferably both independent	Recommends at least one accounting professional who is an independent director

Feature	U.S.	U.K.	Australia	New Zealand	Spain	Singapore	China
Financial literacy	All directors must be financially literate	Recommends all directors be financially literate	Recommends all directors be financially literate	Silent	Silent	Recommends all directors be financially literate	Silent
Resources to hire advisor	Can hire expert advice under law Company must provide funding to hire expert advisor	Silent	Silent	Silent	May engage external advisors	Code states audit committee should have access to resources to carry out its functions; does not specifically address hiring of an advisor	May engage intermediary institutions to provide professional opinions, the relevant expenses to be borne by the company
External audit	Appoint, compensate, and oversee work of CPA firm providing audit or related services Assess and review auditor's independence Pre approve audit and non audit services provided by the auditor	Recommend appointment and compensation of the auditor Monitor effectiveness of the audit Review auditor's independence Does not specify audit committee pre approve non audit services provided by the auditor	Recommend appointment and removal of the auditor, and rotation of engagement partners Review auditor's independence and performance Does not specify audit committee pre approve non audit services provided by the auditor	Encourages audit committee to recommend appointment of auditor Oversee entity-auditor relationship Does not specify audit committee pre approve non audit services provided by the auditor	Responsible for the selection, appointment, reappointment and removal of the external auditor Review auditor independence Ensure company and audit adhere to current regulations on the provision of non audit services	Recommend appointment and compensation of the auditor Review auditor's independence Does not specify audit committee pre approve non audit services provided by the auditor	Recommend the engagement or replacement of the auditor

Feature	U.S.	U.K.	Australia	New Zealand	Spain	Singapore	China
Internal control	Responsible under the law (SOX) to monitor the design and operating effectiveness of the internal control system; review management and auditor's report on internal controls	Review internal controls Review effectiveness of internal audit function, if any	Review internal controls Assess the performance and objectivity of the internal audit function	Silent	Supervise and review the internal audit function, if any If no internal audit function then audit committee monitors the integrity of the internal control systems	Ensure a review of internal control is conducted either by the internal or external auditor Review effectiveness of internal audit function, if any	Monitor internal controls Review the internal audit system and its execution

***If companies fail to follow recommended practices, they are required to disclose the reasons for not doing so, including any alternative processes or mechanisms in place.**

Source: Adapted from Sharma et al. (2009)

Even though this section summarizes the development and current state of audit committee regulation, it should be noted that the regulation of audit committees continues to evolve. With specific reference to the UK, both the European Union EU) and the Financial Reporting Council (FRC) are currently in the process of consulting on further regulatory changes. On 30 November 2011, the European Commission outlined a number of proposals designed to enhance the independence and technical competence of audit committees within the EU (European Commission 2011). While these proposals cover many aspects of the audit process for listed companies, the proposals of specific relevance to audit committees can be seen to cover audit committee composition and responsibility. In terms of composition, the proposals state that: audit committees should be comprised of only non-executive directors, a majority of whom should be independent; at least one member must have competence in auditing and another member must have competence in accounting and/or auditing; and the committee members as a whole must have competence relevant to the sector in which their firm is operating. In terms of responsibility, the proposals state that the audit committee should: supervise the completeness and integrity of the draft audit report; authorize, on a case by case basis, the provision by the statutory auditor of those non-audit services that are still permitted under the proposed reforms; and the overseeing of other aspects of the reforms such as audit rotation, audit tendering and the supply of non-audit services. These proposals still need to be discussed both by the EU Council of Ministers and the European Parliament. In view of the radical nature of the proposals, at present it is difficult to know when, or in what form, these proposals will eventually become part of the regulatory architecture.

In April 2012, the FRC proposed changes to the guidance on audit committees currently provided in the *UK Corporate Governance Code* (Financial Reporting Council 2010). In particular, it proposes that FTSE 350 companies will be expected to put the audit contract out to tender at least every 10 years. The audit committee is expected to report to the main board of directors on the following three specific areas: (i) any significant issues that it considered in relation to the financial statements and how these were addressed; (ii) whether the annual report is fair, balanced and

understandable and provides the information necessary for users to assess the company's performance, business model and strategy; and (iii) its assessment of the effectiveness of the external audit process and its recommendation on the appointment or reappointment of the external auditor, including the steps taken in deciding whether or not to recommend that the audit be put out to tender (FRC, 2012). The FRC is currently consulting on these changes, but it is anticipated that they will be incorporated in the *UK Corporate Governance Code* (Financial Reporting Council 2010) with effect from financial years commencing on or after 1 October 2012.

1.2 Motivation for Study and Research Objectives

Over the years there have been major irregularities in the way companies have reported financial information in their annual reports (e.g. Enron, WorldCom, etc). In more recent times, many financial institutions have either collapsed or needed rescuing by governments despite having unqualified audit reports. These developments have focused attention on the quality of reported financial statements and encouraged regulators and researchers to seek ways of improving the integrity and quality of the financial reporting process. The audit committee is a central element of such reforms with successive governance reports both in the UK and US recommending the use of appropriately constituted audit committees to co-ordinate and monitor all aspects of the company's financial reporting process (Smith, 2003; Blue Ribbon, 1999; Cadbury, 1992). Indeed, the existence of an appropriately constituted audit committee is now a necessity for all listed companies in the UK and US (The UK Corporate Governance Code, 2010; Sarbanes-Oxley, 2002), with corporate governance regulation placing significant importance on the role of the AC. Therefore, there is a profound need to explore the features of audit committees in the UK context, the changing nature of its characteristics and association of these characteristics with the financial reporting process.

The widespread use of audit committees and a quick glance at corporate governance guidelines (The UK Corporate Governance Code, 2010) highlights the importance placed on the role of appropriately constituted audit committee in monitoring the financial reporting process. Various regulatory committees' reports (BRC, 1999;

Cadbury, 2002; Sarbanes Oxley Act, 2002; ASX, 2003; Smith Report, 2003) have recommended that a number of characteristics are important for an audit committee to perform its role competently and effectively. The Smith Report (2003, p3) notes that while all directors of a company need to act in the interest of the company, the audit committee has an even more focused role in ensuring, independently from the executive, that the interests of the shareholders in relation to financial reporting quality are protected. The notion of financial reporting quality is tantamount to the effectiveness of the external audit process and overseeing the external audit process is the prime responsibility of the audit committees. The notion of financial reporting quality is also synonymous with the 'true and fair' view of financial statements that is expected by shareholders. One way of ensuring financial statements are 'true and fair' is by assessing the quality of earnings presented in these statements. If the audit committee is effective in its role then earnings quality will not be compromised. The quality of earnings stands as an indirect measure of the efficiency of the audit committee. Thus assessing earnings quality is a good way of investigating audit committee (including different characteristics) efficiency.

Therefore the purpose of this research study is to examine the impact of audit committee characteristics on financial reporting quality in the context of a large sample of UK companies over the period 2007-2010. To achieve the desired objective, this study investigates the following research questions:

1 *Do audit committee characteristics (including: size, independence, expertise, meetings, busyness, share ownership and tenure) influence the quality of external audit in UK companies?*

2 *Do audit committee characteristics (including: size, independence, expertise, meetings, busyness, share ownership and tenure) influence the quality of earnings in UK companies?*

1.3 Contribution of Study to our Understanding of Audit Committees

This research makes a number of key contributions to the literature on audit committees and financial reporting quality. First, this research examines the influence of various audit committee characteristics (i.e. size, independence, expertise, meetings,

equity ownership, busyness and tenure) on financial reporting quality using UK companies' data. The scope of the study (e.g. 1400 firm-year observations from the largest 350 companies listed on London Stock Exchange covering a time span of four years) makes a valuable addition to the literature by providing some conclusive evidence on the governance effects of audit committees in many areas where audit committees have been expected to bring governance benefits but where prior research findings were either inconclusive or very limited (Peasnell *et al.*, 2005; Baxter and Cotter, 2009; Zaman *et al,.* 2011).

This study covers the period 2007 to 2010 and therefore offers a contemporary analysis of the influence of audit committee characteristics on financial reporting quality. This study is very comprehensive in its scope not only in the selection of audit committee characteristics and methods employed to quantify these characteristics, but also in the use of various proxies developed to capture the true essence of financial reporting quality. The choice of multiple measurement methods both for the dependent and independent variables facilitates a much richer investigation into the relationship between governance and financial reporting quality variables. Therefore this study makes a major contribution to our understanding of the association between the various audit committee characteristics and financial reporting quality in the wake of recently introduced regulatory recommendations. In this study the researcher is measuring the impact of expertise of audit committee members on financial reporting quality by looking at five different dimensions of expertise. These dimensions include; governance expertise, overall financial expertise of an audit committee (i.e. accounting, finance and supervisory expertise), audit committee members with accounting financial expertise and audit committee's non-accounting expertise. The importance of such in-depth analysis presents a fuller picture as to the nature of governance and financial expertise which helps constitute an effective audit committee. For similar reasons the busyness of audit committee members is also measured in four different ways. With members being considered less busy if they hold one other main market directorship, busy if they hold two other main market directorships and very busy if they hold three or more other main market directorships,

and also examining the overall busyness of the audit committees and its impact on financial reporting quality.

This study also seeks to establish the impact of the tenure of audit committee members on financial reporting quality. Recent regulatory reforms call for rigorous review of independent directors after the sixth year of their appointment and questions the independence of these members after the appointment exceeds nine years (The UK Corporate Governance Code, 2010). The findings of this study, therefore, are important in that it provides us a rare insight of the impact of the tenure of audit committee members on financial reporting quality. Other than these traits, this study also measures the impact of equity ownership of audit committee members on financial reporting quality. It is argued that audit committee members perform better if audit committee members have an equity stake in the firm. Hence this study provides some much needed empirical evidence to back up this important but previously untested area in the UK.

This study also seeks to establish an appropriate independence level for audit committees by measuring the impact of fully and proportionate independent audit committees on financial reporting quality. The findings in relation to the independence of these directors are an important contribution and unique in a way that for the first time the notion of independence is measured using independent directors and not just 'non executive directors'. The study also tests recommended best practice in relation to audit committee size and meetings as well as the corresponding absolute values of these variables. This is particularly important as the literature generally suggests that higher levels of audit committee independence, size and diligence result in positive outcomes, however the question still remains as to the actual level (of independence, size and diligence) needed to achieve these outcomes. This is an important issue which the current study seeks to explore. This study utilises a composite measure of audit committee effectiveness from Zaman *et al.,* (2011), a dummy variable representing those firms whose audit committees satisfy all four of the recommended characteristics (ACE1). The study also introduces three new composite measures to capture audit committee effectiveness. Firstly ACE1 is extended to include both the

presence of an accounting expert and the absence of members with excess of nine years' tenure (ACE2). The other two measures (ACE3 and ACE4) include variables representing the accumulated score for each of these four and six variables used in ACE1 and ACE2 respectively.

The study provides support to the board of directors in understanding the important characteristics of the board and audit committees that play a key role in the quality of financial reporting and hence enhance the overall financial reporting process. This study is also equally important to market/financial analysts as the findings of this study in terms of the monitoring mechanisms and the resulting overall financial reporting quality can be used to effectively assess and gauge the market perception of FTSE 350 firms. These findings will also have policy implications as regulators around the world continue to define and refine the desired characteristics and behaviour of audit committees. Therefore the findings of this study will ensure future policy changes regarding audit committees are adequately informed.

1.4 Research Methodology

Agency theory provides the main theoretical underpinnings for this study and determines to a great extent the approach used in the study. This study takes a quantitative research focus in order to answer the research questions outlined above. A sample of FTSE 350 companies from the London Stock Exchange is selected and their annual reports are used as the primary source for data collection. These annual reports are either obtained directly from the companies' websites or accessed using *FAME* database. The audit committee variables and other board variables data are collected by hand and financial statement data items are accessed using *DataStream*, *Thomson One Banker* and *FAME* databases. This study employs panel data analysis and hence data is collected over a period of 4 years from 2007-2010. This research study is introducing new measures to quantify audit committee financial expertise, its busyness and the directors' length of tenure. This study is also using new measures to quantify audit committee size, its independence and the numbers of meetings it holds during the year. Other than using different variables to quantify audit committee characteristics, this study explores the notion of financial reporting quality by

investigating the impact of audit committee characteristics on audit fees and non-audit fee ratio as well as by employing two different earnings management models to assess the impact of governance characteristics on financial reporting quality, thereby making analysis more rigorous and reducing any issues of data validity and reliability.

1.5 Structure of Thesis

Chapter 2 provides a review of the vast empirical literature that exists in the area of corporate governance, audit committee characteristics and financial reporting quality. The first section of the chapter seeks to review the ever expanding academic literature on the governance role of audit committees. Prior reading on this area suggests that the literature can be categorised into a number of different sections: (i) the impact of audit committees on statutory audit; (ii) the impact of audit committees on the quality of financial statements (iii) the market reaction to audit committees and their characteristics; and (iv) the role of audit committees in the context of the internal audit function. After reviewing this section of literature, the chapter then considers the role of audit committees in influencing financial reporting quality. The purpose of this section is to introduce the dual measures of financial reporting quality analysed in the study; earnings quality and audit quality. To this end, this section of the chapter firstly discusses audit quality, in particular focusing on both audit effort and audit independence as measures of audit quality. The studies analysing the role of audit committees and audit quality are then discussed. This is followed by a discussion on earnings quality and the different methods used by prior studies to understand earnings management in the literature. This section also introduces studies that have sought to understand audit committee characteristics and their influence on earnings quality. Finally, the chapter brings all sections together and provides a brief overview of the actual subject under consideration in this thesis, i.e. to understand audit quality and earnings quality as construct of financial reporting quality and their linkage with audit committees.

Chapter 3 presents the research method employed in the study. The chapter begins by explaining the theoretical paradigm in which this thesis is located. This section discusses the appropriateness of using agency theory and its assumptions to underpin

the research. The chapter also outlines the research questions to be investigated and discusses the development of the specific hypotheses this study is seeking to investigate. The hypothesis development section draws heavily from the literature reviewed in the previous chapter. In particular hypothesis related to financial reporting quality and audit committee size, expertise, meetings, tenure, share ownership, busyness and effectiveness are presented. Following this the chapter justifies the choice of sample selection and the data collection methods employed in the study. Due to the empirical nature of the study, a significant portion of this chapter is devoted to identify and justify the dependent and independent variables to be used in analysis. The chapter also explains in detail how the dependent variables (i.e. financial reporting quality) are measured, both in terms of audit quality and in terms of earnings quality. The measurement of independent variables are also discussed here (i.e. audit committee size, expertise, meetings, tenure, share ownership, busyness and effectiveness. The chapter concludes with an explanation of the regression models employed to examine audit committee characteristics and both audit quality and earnings quality. The statistical techniques used in the univariate and bivariate analysis are also explained.

Chapter 4 provides a detailed analysis and discussion of the impact of various audit committee characteristics on audit fees and non-audit fee ratio. The analysis section begins by outlining a comprehensive descriptive analysis of the variables utilised in the first empirical. This is followed by a detailed univariate analyses that highlights the significant differences in the mean and mean rank values of various audit committee variables for firms that are large in size compared to firms that are small in size. The study then includes a correlation matrix showing a two way Pearson correlation between the variables included in this study. Finally this study presents the results of a detailed multivariate regression analysis based on pooled dataset that investigates the hypotheses set out in the previous chapter. The multivariate analysis includes a robust investigation of the impact of various audit committee characteristics on audit quality by utilising audit fee and non-audit fee ratio as measures to capture audit quality.

Chapter 5 provides a comprehensive analysis and discussion of the impact of various audit committee characteristics on firms' earnings management practices. The chapter begins with a detailed descriptive analysis of the audit committee and earnings management variables utilized in this study. Similar to first empirical presented in the previous chapter, a detailed univariate analyses is included to highlight the significant differences in the mean and mean rank values of various audit committee variables for firms that are large in size compared to firms that are small in size. The study then includes a correlation matrix showing a two way Pearson correlation between the variables included in this study. Finally the researcher presents the results of a detailed multivariate regression analysis that includes a robust investigation of the impact of various audit committee characteristics on earnings quality. The notion of earnings quality is measured by using two earnings management models namely McNichols (2002) and Francis et al., (2005).

Chapter 6 then brings together the analyses and discussion conducted in the previous chapters and provides conclusions and recommendations on this study and any future research potential. This chapter also discusses research limitations of the study.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

Developing in parallel with the various policy initiatives surrounding audit committees is a rapidly expanding academic literature seeking to investigate various aspects of the governance role of audit committees. Initial work in this area developed largely from agency theory and viewed audit committees as a potentially useful tool in seeking to reduce agency problems between shareholders and managers. Early research therefore focused on such issues as the determinants of audit committee formation (Pincus *et al.*, 1989; Collier, 1993), with a particular interest both in the influence of specific governance characteristics on audit committee formation (Bradbury, 1990) as well as trying to ascertain whether the formation of an audit committee served to improve governance and accountability in firms (Wild, 1994). The findings of these early studies are important as they provide a rare insight into the influences and determinants of the voluntary formation of audit committees and the governance consequences of such audit committee formation in a relatively unregulated governance environment. However, research has moved on considerably from these early studies and now focuses on different avenues of research. The first section of this chapter will therefore review the more up to date literature concerning the governance role of audit committees. The second section of the chapter then considers the role of audit committees in influencing financial reporting quality. To this end, this section provides an overview of both audit quality and earnings quality as construct of financial reporting quality and their linkage with audit committees.

2.1 The Governance Role of Audit Committees

The widespread adoption of audit committees as one of the key tools of governance reform from the early 1990s changed the nature of academic enquiry away from issues surrounding formation to more focused studies on audit committee characteristics and impact. These issues have motivated a vast amount of empirical research, which this chapter seeks to review. For the purposes of reviewing this literature it is useful to segregate this work into four streams: (i) the impact of audit committees on the statutory audit; (ii) the impact of audit committees on the quality of financial

statements; (iii) the market reaction to audit committees and their characteristics; and (iv) the role of audit committees in the context of the internal audit function.

The next section reviews existing studies that have examined the role of audit committees in influencing audit quality. Issues covered here include how audit committees perceive "audit quality", audit committee behaviour in the context of manager-external auditor conflicts, the influence of audit committees on external auditor behaviour and the choice of external auditor, as well as the interaction between audit committees and other governance mechanisms. Section 2.1.2 examines the influence of audit committees on the quality of a firm's financial statements. Work in this stream seeks to examine whether audit committees and their characteristics impact on the presence and extent of financial misstatements and/or restatements. Section 2.1.3 examines the market reaction to specific audit committee issues. This area of enquiry focuses almost exclusively on the positive or negative share price reaction to specific audit committee "events", often the market reaction to appointments of new members, more recently focusing on reaction to their level of audit/accounting expertise. Section 2.1.4 investigates the interaction between audit committees and companies' internal audit departments. Much of this strand of research focuses on the characteristics of audit committees and the quality of internal auditing in order to explore how these two key mechanisms of internal governance interact. Section 2.1.5 brings together and summarises the governance role of audit committees.

2.1.1 Audit Committees and the Statutory Audit Process

Even from the earliest days, audit committees were viewed as an important mechanism in seeking to improve the statutory audit process. The stream of research looking at the relationship between audit committees and audit quality has sought to examine this from a number of different perspectives such as: trying to understand how audit committees themselves perceive audit quality (Schroeder *et al.*, 1986; Knapp, 1991); investigating audit committee behaviour in the event of auditor-manager conflict (Knapp, 1987; Dezoort *et al.*, 2003a; Bierstaker *et al.,* 2012); the interaction between audit committees and external auditor behaviour (Collier and

Gregory, 1996; Abbott *et al.* 2003a; Zaman *et al.*, 2011; Chan *et al.,* 2012); and the role of audit committees on the choice of external auditor (Chen *et al.*, 2005; Chen and Zhou, 2007). Table 2.1 contains details and summarises the key findings of each of the studies undertaken in the area of audit committees and audit quality.

Table 2.1: Audit Committees and the Statutory Audit Process

Author (Date) and Journal	Research Method	Key Findings
Eichenseher and Shields (1985) *Journal of Accounting and Public Policy*	An analysis of 128 US firms listed on AMEX that reported a change in auditors between 1973 and 1978.	Companies were more likely to form ACs following auditor changes if the new auditor was a Big Eight firm. Companies switching to Big Eight auditors were more likely to have ACs than companies switching to non-Big Eight auditors.
Schroeder et al (1986) *Auditing: A Journal of Practice and Theory*	A survey of 81 AC chairpersons and 41 audit partners in *Fortune 500* firms.	AC chairpersons perceive 'level of partner/manager attention given to the audit' and 'planning and conduct of audit team work', as more important factors in influencing audit quality than either the 'reputation of audit firm' or 'total audit fee charged.'
Knapp (1987) *The Accounting Review*	An experimental study using 179 AC members as subjects (drawn from the 1985 annual reports of Californian firms)	AC members with specific background (i.e. corporate managers) support auditors rather than management. They also provide support to auditors when relative professional standards are objective and when the financial condition of the audited firm is poor.
Haka and Chalos (1990) *Journal of Accounting and Public Policy*	A mailed questionnaire sent to a random selection of 200 firms among *Fortune* 500.	The findings indicate the presence of an agency conflict between management and AC chairs with regard to financial disclosure and discretionary accounting choices. However, there is no significant perceptual difference between the internal and external auditors and the AC chair.
Knapp (1991) *Auditing: A Journal of Practice and Theory*	A hypothetical situation analysis of AC members drawn from 192 publicly trading firms.	AC members perceive that size of the auditor and the auditor tenure has a significant influence on the quality of the audit service provided.
Menon and Williams (1994) *Journal of Accounting and Public Policy*	The sample in this study consists of a random selection of 200 over the counter firms in 1986 and 1987.	57 ACs met only once or did not meet at all and 19 of the ACs had inside managers as members. A close link found between the formation of an AC and the presence of big 8 auditor but there is no link between use/reliance of AC and the big 8 auditor.
Collier and Gregory (1996) *The European Accounting Review*	An analysis of 315 FTSE 500 firms in1991.	There is a positive and significant relationship between audit fees (size-related) and the presence of an AC. There is also a negative relationship between the presence of an AC and audit fees (risk- and complexity-related).
Collier and Gregory (1999) *Journal of Accounting and Public Policy*	An analysis of 142 major UK companies listed on LSE.	A positive relationship found between AC activity (meeting duration) and high quality (Big 6) auditors and leverage (cost of debt). AC activity is significantly lower in firms where the chairman and the chief executive roles are combined. The presence of executive directors (insiders) on an AC had a significant negative impact on AC activity.
O'Sullivan (1999) *The European Accounting Review*	An analysis of the 1995 financial statements of 146 large non-financial listed companies in the UK.	This study shows that corporate governance mechanisms such as board and AC characteristics do not influence auditors' pricing decisions subsequent to the Cadbury reforms.

Author (Date) and Journal	Research Method	Key Findings
Abbott and Parker (2000) *Auditing: A Journal of Practice and Theory*	A sample of 500 companies listed on the NYSE, AMEX or NASDAQ exchanges in 1994.	More active and independent ACs are positively associated with the selection of an industry specialist auditor. The results are significant only with respect to a composite measure that defines effective audit committees as those that meet minimum thresholds of both activity (a minimum of 2 meetings per year) and independence (AC composed of outside directors).
Carcello and Neal (2000) *The Accounting Review*	A sample of 223 non-financial companies that were financially distressed based on 1994 data.	Firms with a high proportion of affiliated directors on their ACs are less likely to receive going concern audit reports.
Archambeault and Dezoort (2001) *International Journal of Auditing*	The sample consisted of 60 publicly traded U.S. companies from the period 1994-1996.	Companies with suspicious auditor switching are less likely to have an AC, have less independent directors on the AC, have less members with accounting and finance experience, are small in size and are less active than the non-switching companies.
Dezoort and Salterio (2001) *Auditing: A Journal of Practice and Theory*	An experimental study involving a sample of 68 AC members taken from largest 500 Canadian firms.	A positive association was found between the number of directorships and the AC support for auditors in an auditor-management dispute. Study also confirms a positive relationship between the audit-reporting knowledge of AC's members and their support for auditor s. However, no association is found between AC members' financial reporting knowledge and their support for auditors.
Carcello et al (2002b) *Contemporary Accounting Research*	A survey of 258 companies audited by big 6 auditors from the *Fortune* 1000 list in 1993.	There is a positive and significant relationship between board independence (percentage of outside directors), diligence (number of meetings), and expertise (other directorships held) and audit fees. Study also finds a positive and significant association between audit fee and AC independence and expertise but finds no significant relationship between the audit fee and frequency of AC meetings.
Cohen et al (2002) *Contemporary Accounting Research*	Interviews with 36 practicing auditors from the U.S.	Respondents see ACs as less important and less significant in the corporate governance mosaic. Several participants expressed their concerns regarding AC expertise by saying that members often lack the expertise to perform their job effectively.
Abbott et al (2003a) *Auditing: A Journal of Practice and Theory*	Sample includes 492 non-regulated firms, audited by Big 5 auditors and filed annual proxy statements between February-June 2001.	Certain characteristics of ACs, independence (composed solely of independent directors) and financial expertise (at least one financial expert) are associated with higher audit fees. Meeting frequency was not significantly linked with higher audit fees.
Abbott et al (2003b) *Contemporary Accounting Research*	538 firms filing proxies between February 2001 and June 2001	Companies whose ACs are independent (consist solely of independent directors) and active (meet minimum four times a year) have a lower non-audit fee to audit fee ratio.

Author (Date) and Journal	Research Method	Key Findings
Carcello and Neal (2003a) *The Accounting Review*	Analysis of 374 randomly selected companies trading between 1988 and 1999, audited by a big 6 firm.	Companies with more affiliated directors on the AC and directors with greater stock ownership are more likely to change their auditor after receiving a going concern report. Companies whose ACs had more governance expertise (sitting on more than one board) are less likely to change their auditor.
Dezoort et al (2003a) *Auditing: A Journal of Practice and Theory*	An experimental study using 131 AC members selected from US public firms in 2000.	If the auditor is consistently asking for audit adjustments then AC members are more likely to recommend adjustments and also in the case of annual report adjustments rather than quarterly reports. However, AC members who were CPAs were less likely to recommend adjustments.
Dezoort et al (2003b) *Journal of Accounting and Public Policy*	An experimental study using 55 AC members of US public companies in 2000.	Study finds that auditors received more support from AC members when materiality justification included both quantitative and consequences-oriented factors (i.e., the interruption of an earnings trend) and when the accounting issue was subject to precise measurement. Also, AC members with CPAs and with greater experience provided greater support for the auditor than did other AC members.
Ng and Tan (2003) *The Accounting Review*	An experimental study involving 101 participants (audit managers) from various US offices of a Big 4 firm.	The availability of authoritative guidance and the effectiveness of the AC jointly influence the perceived auditor-client negotiation outcome. However each variable has greater effect on auditors' perceived negotiation outcome in the absence of the other variable.
Raghunandan and Rama (2003) *Auditing: A Journal of Practice and Theory*	An analysis of proxy statements filed by 199 US companies during 2001.	Shareholders are less likely to vote against auditor ratification if the AC is composed only of independent directors.
Lee et al (2004) *Auditing: A Journal of Practice and Theory*	A comparative analysis of 190 US firms with auditor resignations and 190 firms with auditor dismissals during the period 1996 to 2000.	Auditors are less likely to resign when the AC is independent and have financial expertise present. The frequency of AC meetings and AC share ownership are not statistically significantly associated with auditor resignations.
Chen et al (2005) *Accounting and Finance*	The study comprises 458 Australian listed companies in 2000.	A positive relationship found between AC independence and the use of an industry specialist auditor. However, no association was found between the number of meetings, financial expertise of AC, and the use of an industry specialist audit firm.
Krishnan and Ye (2005) *Accounting Horizons*	An analysis of 383 firms taken from S&P 500 list in fiscal year 2001.	The AC's financial expertise is positively associated with the likelihood of seeking ratification but AC diligence and independence do not seem to matter.
Gaynor et al (2006) *The Accounting Review*	An experimental study involving 100 experienced corporate directors.	AC members are more likely to recommend joint provision if audit quality improves, a finding in line with investors' preferences. However, ACs are reluctant to recommend joint provision when public disclosures are required.

Author (Date) and Journal	Research Method	Key Findings
Goodwin and Kent (2006) *Accounting and Finance*	A survey of 401 Australian public listed companies in 2000.	Higher audit fees are related with AC existence, increased use of IA function, and the frequency of AC meetings. AC expertise is only related with higher fees when AC independence and the number of meetings are low.
Knechel and Willikens (2006) *Journal of Business Finance and Accounting*	An analysis of 102 Belgium listed companies in 2001.	Audit fees are higher when a company has an AC, discloses a high level of financial risk management, and has a higher proportion of independent board members.
Abbott et al (2007) *The Accounting Review*	A survey of Chief Internal Auditors of 219 firms from *Fortune* 1000 in 2000	Effective ACs have a significant negative relationship with the outsourcing of IA routine tasks to the external auditor. There is no significant relationship between *AC effectiveness* (a composite variable which includes independent directors, minimum four meetings and at least one financial expert*)* and the outsourcing of non-routine tasks to external auditors.
Chen and Zhou (2007) *Contemporary Accounting Research*	Analysis of 821 firms that dismissed Arthur Anderson as auditor during 2001 and 2002.	Firms dismissed Andersen quite quickly when they had large and independent boards, had more independent ACs and had financial expertise available.
Lennox and Park (2007) *Contemporary Accounting Research*	Analysis of 1198 firms that change auditors and appoint Big 5 firms between 1995 and 2000.	An audit firm is more likely to be appointed if the company has an officer who is an alumnus of that firm. However the study shows that companies are less likely to appoint officers' former firms if ACs are more independent.
Stewart and Munro (2007) *International Journal of Auditing*	An experimental study, using 75 audit partners and directors, senior managers and managers from auditing firms, located in Australia.	AC existence, its meeting frequency and the auditor's attendance at meetings are significantly associated with a reduction in the perceived level of audit risk. ACs assist in resolving conflicts with management and lead to some improvement in overall audit quality. However, the frequency of AC meetings and the auditor's attendance at meetings does not appear to influence these perceptions.
Vafeas and Waegelein (2007) *The Review of Quantitative Finance and Accounting*	Sample comprises the Fortune 500 firms in 2001 and includes audit fee data from 2001 to 2003.	Audit committee size, expertise, and independence are positively associated with audit fee levels, consistent with the notion that ACs serve as a complement to external auditors in monitoring management.
Boo and Sharma (2008) *Accounting and Finance*	469 US listed companies both regulated and non-regulated in 2001.	The results show a weak association between AC independence and size and the audit fees in regulated firms as compared to non-regulated firms.
Dezoort et al (2008) *Auditing: A Journal of Practice and Theory*	An experimental study based on material administered to 372 AC members.	AC member support (especially with CPA qualification) for adjustments proposed by auditor is significantly higher in post-SOX period.
Hunton and Rose (2008) *Accounting, Organisations and Society*	An experimental study involving 88 experienced AC members from US publicly listed companies in 2005.	AC members are less likely to accept an auditor's restatement recommendation than adjustment recommendation. AC members holding multiple directorships are less likely to accept an auditor's restatement recommendation than members with a single directorship.

Author (Date) and Journal	Research Method	Key Findings
Lee (2008) *Applied Financial Economics*	An analysis of 631 S&P firms with 2000 and 2001 fiscal year ends.	Finds a negative association between AC effectiveness and changes in the non-audit to audit fee ratio.
Mangena and Tauringana (2008) *International Journal of Auditing*	An analysis of interim reports of 258 non-financial UK listed companies published in the period 2001–2002	Finds a positive association between the external auditor's involvement in reviewing interim reports and AC independence and financial expertise. There is no significant association between the external auditor involvement in reviewing interim reports and AC size and meetings.
Bronson et al (2009) *Journal of Accounting and Public Policy*	A useable sample of 208 firms taken from datasets used by Carcello and Neal (2000, 2003)*	The results show that the benefits of AC independence are consistently achieved only when the committee is completely independent. *These datasets (1994 and 1988-1999 respectively) precede the BRC (1999) and SOX (2002) requirements that all AC be completely independent.
Krishnan and Visvanathan (2009) *Journal of Accounting, Auditing and Finance*	801 firm-year observations from S&P 500 firms, all audited by Big 5 auditors between 2000 and 2002.	Financial expertise of AC members is negatively related to audit fees only when expertise is defined as accounting financial expertise. There is a positive but insignificant relationship between the audit fee and broadly defined financial expertise (non-accounting or accounting financial experts).
Engel et al (2010) *Journal of Accounting and Economics*	An analysis of 3,295 firm-year observations over the period 2000 to 2004.	Total compensation and cash retainers paid to audit committees are positively correlated with audit fees and the impact of the Sarbanes-Oxley Act.
Pomeroy (2010) *Auditing: A Journal of Practice and Theory*	A Canadian experimental study using a modified version of the Johnstone and Muzatko 2002 teaching case.	Negotiation knowledge increases AC discomfort but has no effect on AC investigation. AC members investigate more extensively as accounting decisions become increasingly aggressive and AC members with accounting expertise are particularly thorough in their investigations.
Zaman et al (2011) *Journal of Business Finance and Accounting*	A sample of 155 UK companies covering the period from 2001 to 2004.	The results show that ACE (composite measure of AC size, independence, expertise and meetings) has a significant and positive impact on both audit fees and fees for non audit services.
Bierstaker et al (2012) *Auditing: A Journal of Practice and Theory*	A US based experimental study involving six experienced audit committee members.	The findings show that audit committee members are more likely to support the auditor in an accounting disagreement when audit committee compensation includes long-term stock options.
Chan et al (2012) *Accounting and Finance*	An analysis of 1524 firm-year observations for the years 2005 and 2006.	The results show that audit fees are negatively associated with the proportion of long board tenure directors on the independent audit committee.

Prior studies have analysed the perceived priority of audit committee members in oversight tasks (Dezoort 1997) and explored how audit committees help to understand the complex nature of the factors associated with the quality of audits (Schroeder *et al.*, 1986; Knapp, 1991). Research looking at audit committee member's perception of audit quality has found that audit committee members see the quality of audits, as measured by the auditor's ability to disclose material error, improving in the first few years of an auditor engagement but then note a drop in quality as auditor tenure lengthens (Knapp, 1991). This suggests that audit committees should focus on the length of time the auditor has been in place, paying particular attention to those auditors in place for a long period of time. This is particularly important as Knapp (1991) has noticed the auditor-client relationship results in a learning curve effect and thus improves audit quality in the first few years of the relationship. However, as the relationship matures, complacency and over reliance can result in less rigorous audits. Moreover, Schroeder *et al.* (1986) note that audit committee chairpersons perceive audit quality from a slightly different perspective to other audit committee members. They assign more importance to audit team factors such as the level of partner/manager attention given to the audit' and 'planning and conduct of audit team work' as compared to reputation or the audit fee charged by the firm.

Another area of interest is the behaviour of audit committees in situations where management is in dispute with external auditors over audit matters. In particular, frequently profound differences exist between the audit committee chair, management and external auditors on issues such as financial disclosure and discretionary accounting choices (Haka and Chalos, 1990). Evidence suggests that audit committee members tend to support the external auditor in audit disputes between the auditor and management, especially on financial standard disputes and when the financial position of the audited firm is poor (Knapp, 1987). Audit committee support for auditors on issues involving earnings trends and precise measurement of accounting issues is seen to be even stronger from members qualified as Certified Public Accountants (CPA's) and with greater relevant work experience (Dezoort *et al.*, 2003). Furthermore, audit committee members with greater experience as independent directors (i.e. multiple directorships) and auditing knowledge are also

more likely to support external auditors in an auditor management dispute (Dezoort and Salterio, 2001). More recently Bierstaker *et al.,* (2012) in a US based experimental study involving six experienced audit committee members found that audit committee members are more likely to support the auditor in an accounting disagreement when audit committee compensation includes long-term stock options.

In addition to the audit committee's perception of audit quality and its role in auditor management conflict, a significant stream of literature focuses on its role in the choice of external auditor. Auditor selection, evaluation and even dismissal are some of the primary responsibilities of the audit committee (Mautz and Neumann, 1970; Braiotta, 1994; BRC, 1999; Smith, 2003). One aspect of concern to earlier researchers was the potential for audit committees to favour larger auditors as they may be perceived to be providing better audit quality (Knapp, 1991), however Bradbury (1990) found that this relationship does not hold. More recent research on audit committees and auditor choice has sought to focus on two key areas; the choice of auditor (i.e. big 8 vs. non-big 8 audit firms or industry specialist auditors); and auditor retention/removal. Eichenseher and Shields (1985) found that companies with an audit committee are most likely to choose big 8 auditors. Specifically in relation to former Arthur Andersen clients, Chen and Zhou (2007) found those firms with larger, more independent audit committees with financial expertise were more likely to choose a big 4 auditor. Industry specialist auditors have been favoured by audit committees which are more independent (i.e. those audit committee's composed entirely of outside directors) and who hold at least two meetings per year (Abbott and Parker, 2000). However Chen *et al.*, (2005), although agreeing with the impact of independence in favouring more specialised auditors, found that the number of meetings and financial expertise had no bearing on the choice of a specialist auditor. The difference in results is most probably due to the selection of country and sample year chosen for analysis. Abbott and Parker (2000) studied firms listed on US stock exchanges in 1994 however Chen *et al.* (2005) chose Australian listed companies in 2000.

Linking this with auditor switching, Chen and Zhou (2007) found that audit committee independence and the audit committee's financial expertise also played a role in firms

choosing to dismiss Arthur Andersen more quickly, than firms whose audit committee did not have these characteristics. In contrast, Carcello and Neal (2003a) suggest there was no significant association between the level of audit committees' financial expertise and the likelihood of auditor change following a going concern report. Lee et al (2004) argue that audit committees are likely to put more effort into working with the external auditor if they are more independent and have greater levels of financial expertise present. Referring specifically to suspicious auditor switching (i.e. removing auditors after receiving an unclean audit opinion or after disclosure of a reportable event), Archambeault and Dezoort (2001) suggest that those companies with less desirable audit committee characteristics, such as, committees with fewer members, fewer independent members, members with less expertise, holding fewer meetings were more likely to switch auditors.

Other themes that emerge from the literature are around the areas of auditor ratification and audit restatement/adjustments. There have been some contrasting findings from studies in respect of auditor ratification. For example, Raghunandan and Rama (2003) found audit committee independence to be a key characteristic which aids auditor ratification. However this has been rebutted by Krishnan and Ye (2005) who found audit committee independence and diligence did not matter. Instead they found a link between audit fees, audit committee financial expertise and auditor ratification; with higher audit fees and better expertise equating to a higher likelihood of companies seeking shareholder ratification.

The financial statements adjustment issue is usually at the cornerstone of management-auditor disputes (Knapp, 1987). It has also been suggested that although financial statement fraud is more likely to be found in interim reporting (Beasley *et al.*, 2000), it has been found that adjustments are more likely to be recommended for year-end reports. It is therefore important to assess the role audit committee members play in auditor adjustment recommendations. Using source credibility theory, Dezoort *et al.* (2003a) argue that auditors who are consistent in calling for an adjustment are likely to have audit committee members support as they will be perceived as being more credible than management. Prior studies have also found

that audit committee members tend to support auditors in the adjustment recommendations if they have more independent director experience and knowledge of auditing (Dezoort and Salterio, 2001); and if the auditor judgement is based on both quantitative and qualitative factors (Dezoort *et al.*, 2003). However, when faced with restatement decisions, audit committee members have been found to support management in opposition to such decisions, this opposition is further amplified when members of audit committees also hold multiple directorships as the restatement issue may raise questions about their independence due to the possibility that their focus is more on their own self-interest rather than stakeholder-interests (Hunton and Rose, 2008). Some common themes emerging refer to audit committee members who are also CPAs with studies showing that such members are less likely to recommend adjustments (Dezoort *et al.*, 2003a). However this has changed post-SOX, with CPA members now more likely to support adjustments than non-CPA members (Dezoort *et al.*, 2008).

2.1.2 Audit Committees and Financial Statement Quality

Audit committees are increasingly taking responsibility for the quality of corporate financial statements (SOX, 2002; Combined Code, 2008). This increasing focus on audit committee responsibilities has directed research to focus on the performance of audit committees by examining the impact of audit committee inputs (e.g. audit committee independence, expertise and meeting frequency) on financial reporting outputs (e.g. alleged fraud cases, misstatements or restatements (Beasley *et al.*, 2009). The archival studies presented in table 2 have sought to capture the concept of financial reporting quality, in relation to the role of audit committees, in three ways. First, a set of studies have focused on instances of alleged fraud and misstatements and/or restatements (Archambeault *et al.*, 2008; Farber, 2005; Abbott *et al.*, 2004; Song and Windram, 2004). Second, a reasonably dominant strand of enquiry has focused on analysing the actual reported numbers, commonly referred to as earnings quality (Kent *et al.*, 2010; Baxter and Cotter, 2009; Vafeas, 2005) [This is considered in more detail in section 2.2.3]. Finally, a number of researchers have examined the company's stance on the mechanisms and level of disclosure (Kent and Stewart, 2008; Mangena and Pike, 2005).

The evidence available on the impact of audit committee existence and the occurrence of alleged fraud or irregularities shows that firms investigated for instances of financial statement fraud are less likely to have an audit committee (Beasley *et al.*, 2000). Evidence also suggests that audit committees have a positive impact on financial statement quality as the presence of audit committees are associated with fewer lawsuits of alleged fraud from shareholders and fewer SEC enforcement actions (McMullan, 1996). However, this is in contrast to the study of Beasley (1996), who failed to find any association between financial statement fraud and the presence of an audit committee, although this study further documented that board composition was more important than audit committee formation.

The stream of research focusing on the association between various characteristics of audit committees (noted by Bedard *et al.* (2008) as signals of its quality) and financial statement fraud also documents similar results. Analysis of US firms subject to allegations of fraud by the SEC shows that audit committees in these firms were less independent (Beasley *et al.*, 2000), possessed less financial expertise (Farber, 2005), and were less active (Beasley *et al.*, 2000). Ultimately, these audit committees failed to fulfil their oversight role. Similarly, Song and Windram (2004), while reporting UK evidence, note that FRRP[2] actions are more likely to be directed at companies whose audit committee members have lower levels of financial literacy, hold less frequent committee meetings and whose members possessed more other directorships. Martinez and Fuentes (2007) also noted that audit committees with fewer members and greater levels of member independence are less likely to receive an error or non-compliance qualification. Goodwin and Seow (2002), in a Singapore based survey, also reported that audit committees with fully independent members and all with some financial expertise are more likely to prevent financial statement errors and detect incidences of fraud. Literature on the different dimensions of financial expertise shows that the specific type of accounting expertise can influence the audit committee's evaluation of financial reporting quality (McDaniel *et al.* 2002). For example, Krishnan and Lee (2009) find that firms experiencing greater litigation risks

[2] In the UK, action against companies by the Financial Reporting Review Panel (FRRP) for defective financial statements has been used as an equivalent signal to SEC Enforcement Actions in the US.

prefer accounting financial experts in their audit committees as compared to non-accounting financial experts[3].

The occurrence of financial statement misstatement/restatement[4] is not only costly to investors (Archambeault *et al.*, 2008), it also has reputational consequences for audit committee members (Srinivasan, 2005). Recent evidence suggests that certain audit committee attributes, such as independence, activity and expertise, have a negative association with occurrences of restatements (Abbott *et al.*, 2004). In addition, stock option grants for audit committee have been shown to have a positive association with the likelihood of accounting restatements (Archambeault, 2008). This is further confirmed in another US based experimental study (Magilky *et al.* 2009), which concluded that audit committee members are only objective in financial reporting when they are not remunerated with stock based compensation. In the same vein, Cullinan *et al.* (2008) report that independent boards with no option grants, are associated with a reduced probability of misstatement. They, however, failed to find a statistically significant association between audit committee independence and misstatements. For share options compensation, there seems to be an agreement on the view that share options decrease the effectiveness of audit committee members and hence reduce financial reporting quality. These findings clearly show that share option plans for audit committee members actually weaken the effectiveness of the audit committee in their monitoring and oversight of the financial reporting process. The issue of director option compensation has also received attention in the UK governance policy recommendations. Combined Code (2003, p12) clearly states that "non-executive directors should not hold options over the shares in their companies".

As overseeing the financial reporting process is the direct responsibility of audit committees, any occurrences of restatements can highlight possible weaknesses in this

[3] Based on the SEC's narrow definition and DeFond *et al.* (2005), an accounting financial expert (AFE) is defined as a person who has previously held or currently holds a job directly related to accounting and auditing expertise. These experts include CPAs, CFOs, CAOs, controllers, and auditors. Non accounting financial experts (NAFEs) include those who have previously held or currently hold positions such as managing director in investment banking or venture capital firms, or accounting or finance professors (Davidson *et al.* 2004), as well as persons who have worked as CEOs or presidents of ''a for-profit corporation'' (DeFond *et al.* 2005).

[4] The GAO (2002, 2006) reports that accounting restatements increased 145 percent and cost investors $100 billion during 1997-2002.

oversight role, thus exposing audit committee members to reputation and litigation risks. Srinivasan (2005), while examining the career consequences of audit committee members subsequent to accounting restatements, note that for severe restatements the total turnover of audit committee members is higher as compared to the other directors. The loss of positions on other boards is also higher for audit committee members as compared to other outside directors not members of the audit committee.

A further area of significant interest is the impact of audit committee monitoring on firms' earnings manipulation practices (discussed further in section 2.2.3). Since the worth of a company is directly related to its reported earnings figures, top management view earnings management[5] as a device to meet earnings expectations for their companies (Loomis, 1999). Earnings management has always been a major concern[6] and a central element of major regulatory reforms around the world (AARF, 1997; BRC, 1999; Smith, 2003). Much of the research in this area has sought to examine the impact of various characteristics of audit committees on doctored records, by developing and empirically examining a variety of proxies for earnings management. These proxies typically include the use of various accruals based measures such as income increasing or decreasing accruals (Bedard *et al.,* 2004; Peasnell 2005; Vafeas, 2005), absolute accruals (Osma and Noguer, 2007; Baxter and Cotter; 2009), quarterly accruals (Yang and Krishnan, 2005) and intentional and unintentional accruals (Kent *et al.*, 2010). Other measures used in the archival research are Penman and Zhang's score (Krishnan and Visvanathan, 2008) and transfer pricing manipulations (Lo *et al.*, 2010).

[5] As defined by the SEC: 'the practice of distorting the true financial performance of (a) company (SEC, 1999, p. 3).
[6] Former US Securities and Exchange Commission (SEC) Chairman Levitt (1998) expressed his serious concerns over earnings management in his famous "the Numbers Game" speech. He called for a fundamental cultural change for corporate management and strengthening corporate governance, especially improving the effectiveness of audit committee.

Table 2.2: Audit Committees and Financial Statement Quality

Author (Date) and Journal	Research Method	Key Findings
Beasley (1996) *The Accounting review*	An analysis of 150 (75 fraud and 75 non-fraud) public traded companies between 1980 and 1991.	There is no significant affect of the presence of an AC on the reduction of instances of financial statement fraud.
Dechow et al (1996) *Contemporary Accounting Research*	92 firms subject to enforcement actions by the SEC between 1982 and 1992.	These companies are more likely to have a management dominated board, are more likely to have a CEO who also serves as chairman and hardly any of the companies had an AC.
McMullan D (1996) *Auditing: A Journal of Practice and Theory*	A sample of 219 companies from the Fortune 500 list from 1984 to 1988.	ACs are associated with fewer shareholder lawsuits alleging fraud, fewer SEC enforcement actions, fewer illegal acts and fewer instances of auditor turnover when there is an auditor-client disagreement.
Beasley et al (2000) *Accounting Horizons*	Analysis of fraudulent financial reporting cases alleged by the SEC during the period 1987 to 1997.	Not all fraud companies had ACs and an internal audit function in place. In the case of companies which had ACs, they were less independent and had fewer meetings.
Goodwin and Seow (2002) *Accounting and Finance*	A survey (using hypothetical cases) based on a sample size of 71 directors and 63 auditors from Singapore.	A strong AC has a significant impact on audit effectiveness, on errors in financial statements and on the detection of management fraud. However, this variable was not significant with regard to the strength of internal control.
Klein (2002b) *Journal of Accounting and Economics*	692 firm-years of publicly trading US firms between 1992 and 1993.	Study finds a negative association between abnormal accruals and the proportion of outside directors on the AC. However, the results show no difference in abnormal accruals for firms with or without a wholly independent AC.
McDaniel et al (2002) *The Accounting Review*	An experimental study involving 20 financial experts and 18 financial literates during 2000 and 2001.	Literates (MBA graduates) are more likely to identify concerns about reporting treatments for activities that are prominent and are non-recurring in nature however experts (audit managers) are more likely to raise concerns about reporting treatments for less prominent and recurring activities.
Carcello and Neal (2003b) *Corporate Governance: An International Review*	An analysis of 138 firms (US) experiencing financial distress during 1994.	Financially distressed companies with a high percentage of affiliated directors on the AC have a significant positive association with optimistic disclosures.
Xie et al (2003) *Journal of Corporate Finance*	282 firm year observations from *S&P 500 companies* in the years 1992, 1994, and 1996.	Smaller discretionary current accruals are associated with firms whose AC members and board members have greater financial background. Also firms with more active ACs are associated with reduced levels of discretionary current accruals.

Author (Date) and Journal	Research Method	Key Findings
Abbott et al (2004) *Auditing: A Journal of Practice and Theory*	88 restatement firms listed on AMEX, NASDAQ and NYSE between 1991 and 1999.	Certain characteristics of ACs (activity, independence and expertise) show a significant and negative association (meaning high level of one linked with high level of another variable) with the occurrence of restatements.
Bedard et al (2004) *Auditing: A journal of practice and Theory*	Study of 300 US firms using data from the Compustat database in 1996.	ACs which are independent (composed of outsiders) and have at least one member with financial expertise are better able to constrain earnings management. However this study finds no association between the activity and size of the ACs and the likelihood of aggressive earnings management.
Song and Windram (2004) *International Journal of Auditing*	The sample size consists of 54 companies (27 FRRP cases and 27 non-FRRP cases) between 1991 and 2000.	AC financial literacy and frequency of meetings are very important determinants of its effectiveness in financial reporting. This study also shows that ACs with outside directorships and small size boards are more effective and hence better able to enhance financial reporting quality and reduce the probability of financial reporting irregularities.
Davidson et al (2005) *Accounting and Finance*	434 firms listed on the ASX for the 2000 financial year.	A negative relationship between ACs comprising a majority of non executive directors and earnings management. However no relationship is found between earnings management and AC existence, its effectiveness (size and meetings) and use of a big 5 auditor.
Farber (2005) *The Accounting Review*	87 firms identified by the SEC as fraudulently manipulating their financial statements between 1982 and 2000.	Fraudulent firms have poor governance (low percentage of outside directors, less AC financial expertise, less AC meetings, small percentage of big 4 audit partners and have CEOs who are also chairmen of the board of directors). It further shows that firms that take actions to improve governance have superior stock price performance.
Mangena and Pike (2005) *Accounting and Business Research*	A random sample of 262 financial statements published in the period 2001 to 2002 by companies listed on LSE.	There is a significant negative association between the level of interim disclosure and the ownership of AC members; a significant positive association between interim disclosure and the financial expertise of the AC; no significant relationship between the level of interim disclosure and AC size.
Peasnell et al (2005) *Journal of Business Finance and Accounting*	1271 firm-year observations for UK listed firms over the period 1993–1996.	The presence of an AC does not affect the extent of income-increasing manipulations to meet or exceed thresholds. It also has no effect on the degree of downward manipulation when pre-managed earnings exceed the threshold by a large margin.
Srinivasan (2005) *Journal of Accounting Research*	An analysis of 409 firms that announced restatements between 1997 and 2001 as provided in Government Accounting Office (GAO) [2002].	For the firms that overstate earnings, the likelihood of director departure increases with restatement severity, particularly for AC directors. In addition, directors of these firms are no longer present in 25% of their positions on other boards. This loss is greater for audit committee members and for more severe restatements.

Author (Date) and Journal	Research Method	Key Findings
Yang and Krishnan (2005) *International Journal of Auditing*	896 US firm-year observations for the years 1996 to 2000.	This study finds a negative relationship between the number of outside directorships held by AC directors and quarterly discretionary accruals. It also finds a positive association between independent AC directors and earnings management. Also the average tenure of audit committee directors is negatively associated with quarterly earnings management.
Vafeas (2005) *Contemporary Accounting Research*	An analysis of 252 U.S. firms between 1994 and 2000.	The length of board tenure and proportion of AC insiders are associated with lower earnings quality and AC meeting frequency is associated with higher earnings quality. Study also finds that committee member experience in other committees is associated with fewer small earnings increases.
Koh et al (2007) *Accounting and Finance*	933 firm-year observations from 1998 to 2002, consisting of 337 distinct firms (Australia).	This study finds a negative relationship between active and independent AC and income-increasing abnormal accruals.
Martinez and Fuentes (2007) *Corporate Governance: An International Review*	An analysis of 137 Spanish firms in 1999.	AC size and independence have a significant influence on the likelihood of receiving a qualified audit report. AC meetings and members' shareholding are not significantly associated with audit reports containing error and non-compliance qualifications.
Osma and Noguer (2007) *Corporate Governance: An International Review*	An analysis of questionnaire data from large Spanish quoted companies (involves 155 firm-year observations from 1999 to 2001).	Finds no evidence of any correlation between the presence of an independent AC and earnings management.
Piot and Janin (2007) *European Accounting Review*	An analysis of 102 non-financial firms which were included in the SBF-120 Index during 1998–2002.	Finds that abnormal accruals decrease when an AC is present but that AC independence has no effect on accruals measurement.
Archambeault et al (2008 *Contemporary Accounting Research*	Analysis of 306 US public companies (using 153 restatements and 153 matched non-restatements) from 1999 to 2002.	Finds a significant positive relationship between the short-term and long-term stock option grants and the likelihood of financial reporting failures or accounting restatements.
Cullinan et al (2008) *Advances in Accounting*	An analysis using a sample of 105 US firms that misstated their revenue between 1997 and 2002.	The 'Percentage of independent directors (SOX plus no options definition)' is associated with a decreased probability of misstatement. Most of the corporate governance variables including AC independence level were not significantly associated with the probability of misstatement.
Kelton and Yang (2008) *Journal of Accounting and Public Policy*	An analysis of 284 firms listed on NASDAQ stock exchange during 2003.	The results show that more independent directors, AC diligence and more members with financial expertise are more likely to consider internet financial reporting.

Author (Date) and Journal	Research Method	Key Findings
Kent and Stewart (2008) *Accounting and Finance*	An analysis of 965 companies listed on the ASX in 2004.	Finds a positive association between the frequency of AC meetings and the level of AIFRSs (Australian equivalents to IFRSs) disclosure. AC size and expertise are negatively associated with disclosure level and no significant association exists between AC independence and disclosure level.
Krishnan and Visvanathan (2008) *Contemporary Accounting Research*	929 observations from the S&P 500 firms representing years 2000 through 2002.	Finds a positive association between an AC's accounting financial expertise and conservatism. This finding does not hold for non-accounting financial experts or non-financial experts. Also finds that only accounting financial expertise is positively associated with Penman and Zhang's *Q* score, a measure of earnings quality.
Baxter and Cotter (2009) *Accounting and Finance*	Sample is drawn from the top 500 Australian companies listed on the ASX with financial years ending during 2001.	A positive association exists between the presence of an AC and an increase in earnings quality. There is no significant association between the characteristics of an AC (independence, activity, expertise and size) and earnings quality.
Krishnan and Lee (2009) *Auditing: A Journal of Practice and Theory*	An analysis of AC members of 802 *Fortune 1000* firms in 2004.	Firms with higher potential litigation risk are more likely to appoint accounting financial experts to their audit committees.
Magilke et al (2009) *The Accounting Review*	A US based experimental design study, using 3 AC Members per session in 6 different sessions.	The study finds that AC members who do not receive stock-based compensation are the most objective. However, AC members prefer biased reporting when compensated with stock-based compensation.
Dhaliwal et al (2010) *Contemporary Accounting Research*	An analysis of 770 firms during 2004 to 2006.	AC accounting experts who are independent, hold fewer directorships, and have lower tenure in their firms have a profound positive impact on accruals quality. Supervisory experts failed in complementing AC accounting or finance experts to enhance accruals quality.
Kent et al (2010) *Accounting and Finance*	Sample consists of 392 listed Australian companies in 2004.	Study finds that size of the AC and Big 4 external audit firm are associated with higher discretionary accruals quality. More independent and more active ACs are associated with innate (non-discretionary) accruals quality.
Lo et al (2010) *Journal of Corporate Finance*	A sample of 266 companies listed on the Shanghai stock exchange in 2004.	Results show that firms with higher board independence and financial experts on their audit committees are less likely to engage in transfer pricing manipulations.
Lary and Taylor (2012) *Managerial Auditing Journal*	A sample of 60 ASX listed companies reporting a restatement during the period 2004-2009.	AC independence and financial expertise are significantly related to a lower incidence and severity of financial restatements.

Author (Date) and Journal	Research Method	Key Findings
Sun et al (2012) *Managerial Auditing Journal*	The sample includes pubic traded stock insurance companies operating in the USA in 2003.	Accounting, finance and insurance financial expertise are associated with more accurate loss reserve estimate.

Another important theme evident in this area of literature is the discussion of the role of audit committee characteristics in a firm's disclosure practices. Studies have shown that the financial expertise of an audit committee plays a key role in its voluntary disclosure practices, for both interim (Mangena and Pike, 2005) and internet (Kelton and Yang, 2008) disclosure. Kelton and Yang (2008) have further suggested that frequency of meetings and independence are also important variables in a firm's decision to voluntarily disclose financial information and hence improve disclosure transparency. In contrast, Kent and Stewart (2008) analysed the disclosure behaviour of 965 Australian firms in their transition to IFRSs and found that the extent of financial expertise on the audit committee had a negative impact and the frequency of audit committee meetings had a positive impact on the level of financial disclosure. The findings related to audit committee size are also rather mixed as audit committee size is seen as having a positive impact on interim disclosure practices (Mangena and Pike, 2005), while, on the other hand, shows a negative association with the disclosure behaviour of firms in the case of their transition to IFRSs (Kent and Stewart, 2008). In another study, while examining the impact of audit committee independence on disclosure levels of financially distressed companies, Carcello and Neal (2003) found that non-independent[7] audit committee members were positively associated with the optimism of firms' going-concern disclosures. These findings supported their hypotheses that affiliated or non-independent audit committee members of financially distressed firms tend to support management in their decision not to include a going concern note. If they do, then they prefer to include a rather optimistic note on the going concern disclosure.

2.1.3 Audit Committees and Market Reaction

A further area of empirical research in the context of audit committees has been to examine the market reaction to specific audit committee issues. Since research on market reaction focuses on changes to a company's share price in light of specific "events", it lends itself to studies of market reaction to appointments of new audit committee members and, more recently, focusing on their level of audit/accounting expertise. In its most simple form, a positive share price reaction to audit committee

[7] The percentage of audit committee members classified as affiliated directors.

appointments or characteristics of appointees, suggests that investors believe the change is likely to be of future benefit to the company. Of course, a negative share price reaction suggests a more pessimistic outlook, at least from the point of view of investors. Details and summarised findings of the studies in this stream of research are presented in table 2.3.

Wild (1994; 1996) analysed 260 US firms, exploring the impact of audit committees on company performance and reported that earnings response coefficients [8] were significantly higher after the formation of an audit committee. In addition, Wild (1996) found that the stock market reaction to earnings reports was significantly higher subsequent to the formation of the audit committee. These findings suggest that investors recognise the important governance role of audit committees in enhancing managerial accountability to shareholders and hence increasing the quality of reported earnings. Taking a step further into the quality of audit committees, research has shown that those firms that are proactive in ensuring robust audit committees are associated with superior stock price performance (Farber, 2005). In the same vein, Bolton (2012) found that audit committee share ownership has a positive and significant impact on firm performance. This suggests that investors appear to value governance improvements.

Focusing more specifically on the expertise of audit committee members, research shows that the appointment of such members' with audit experience as compared to financial management experience (Davidson, 2004) and accounting financial expertise as compared to non-accounting expertise (Defond *et al.*, 2004) generates a significantly higher market response, thus resulting in increased firm value. Chan and Li (2008) further documented that audit committees composed of a majority of expert independent directors[9] provide higher firm value, and even suggested that a fivefold increase is expected if these audit committees include a finance trained director[10]. These findings not only reflect markets' appreciation, over a sustained period, of these

[8] Standard capital market test procedure is used to check informativeness of earning reports.
[9] An expert independent director is one who holds a top management position in another publicly traded firm.
[10] A finance trained director meets one or more of the following criteria: (1) a business school professor; (2) a Certified Public Accountant; (3) a director or CEO of a firm in the finance industry; (4) a chief financial officer; (5) an accounting firm partner; (6) an investment firm partner; and (7) a former secretary of Treasury.

particular audit committee characteristics, they also show an over-whelming positive response by the market to new audit committee appointments with specific financial expertise. Similarly, firms preparing for an initial public offering (IPO) have also been found to have benefitted from the independence and financial expertise of audit committees, possibly as these characteristics resulted in a significant reduction in the level of under-pricing of these firms (Bedard *et al.*, 2008). Moreover audit committees financial expertise are positively associated with firm performance during the recent global financial crises (Aldamen *et al.,* 2012). These findings call for more support to the world-wide movement in legislation requiring that audit committees should be more independent and possess greater competence.

Though the evidence so far is uniform, apart from Bedard *et al.,* (2008) and Aldamen *et al.,* (2012) the findings have been derived solely from US based studies. This paucity of research in other regulatory environments needs to be addressed, particularly as a recent study in Australia has shown contradictory results, finding no substantial impact of the existence of audit committees upon firm value (Henry 2008). In addition, most of the studies reported here only analyse data prior to the SOX reforms in the US so the current applicability of this evidence remains in question. For example, a recent US study using pre and post-SOX data, suggests that though the SOX Act led to increased board monitoring and higher firm performance, certain mandated minimum requirements, such as frequency of audit committee meetings, impose unnecessary costs on the firms and therefore serves to reduce firm value (Brick and Chidambaran, 2010).

Table 2.3: Audit Committee and Market Reaction

Author (Date) and Journal	Research Method	Key Findings
Wild (1994) *British Accounting Review*	Study is based on data from 260 US companies that formed an AC between 1966 and 1980.	Earnings are significantly more informative to market participants after formation of the AC.
Wild (1996) *Journal of Accounting, Auditing and Finance*	Study is based on data from 260 US companies that formed an AC between 1966 and 1980.	Finds a significant increase in the market's reaction to earnings reports subsequent to the formation of the AC. Specifically, the reaction to earnings reports is more than 20 percent greater after the formation of the committee than before.
Anderson et al (2004) *Journal of Accounting and Economics*	A sample of 252 US firms taken from three different data sets between 1993 and 1998.	Study finds that independent and active (meeting frequency) ACs are associated with a lower cost of debt. Also shows that larger ACs are inversely associated with the cost of debt indicating that larger ACs are perceived to provide greater monitoring of the financial accounting process.
Davidson W (2004) *Journal of Accounting and Public Policy*	An analysis of appointment announcement data between 1990 - 2001 for 136 firms trading on US exchanges.	The appointment of an AC member with financial expertise increases firm value. It also shows that the market perceives audit firm experience as more important than corporate financial management or financial statement analysis experience.
Defond et al (2004) *Journal of Accounting Research*	An analysis of 509 US corporations (involving 702 announcements) of newly appointed outside directors to ACs between 1993 and 2002.	Finds a positive response from the market when an accounting/financial expert is appointed to the AC. No significant response to the appointment of a non-accounting/financial expert. Also finds that positive response applies only to those firms who had strong corporate governance*. *The strength of the governance environment is measured using a dichotomous variable that includes: (1) board size, (2) board independence, (3) AC size, (4) AC independence, (5) shareholders' rights and (6) institutional ownership.
Farber (2005) *The Accounting Review*	87 firms identified by the SEC as fraudulently manipulating their financial statements between 1982 and 2000.	Fraudulent firms have poor governance (low percentage of outside directors, less AC financial expertise, less AC meetings, small percentage of big 4 audit partners and have CEOs who are also chairmen of the board of directors). It further shows that firms that take actions to improve governance have superior stock price performance.
Karamanou and Vafeas (2005) *Journal of Accounting Research*	An analysis of management earnings forecasts made by 275 Fortune 500 firms between 1995 and 2000.	AC expertise and board independence are positively associated with market reaction to earnings forecast however AC size is negatively related to market reaction to forecasts. It further shows that effective ACs and boards are associated with higher forecast accuracy.

Author (Date) and Journal	Research Method	Key Findings
Bedard et al (2008) *Corporate Governance: An International Review*	Study of a sample of 246 Quebec-based IPO's during the period 1982 to 2002.	Study shows that independence and the financial expertise of an AC significantly decrease the under-pricing of the IPO. However this study finds no link between the existence of an AC and the level of the under-pricing of IPO.
Chan and Li (2008) *Corporate Governance: An International Review*	An analysis of largest 200 publicly traded *Fortune 500* firms in year 2000.	Firm value increases only if ACs are composed of expert independent directors. The inclusion of a finance trained director in an expert independent AC increases firm value significantly (roughly 5 times more than just having an independent AC).
Chen et al (2008) *Corporate Governance: An International Review*	An analysis of 228 foreign registrants (77 without AC and 151 with AC) from 1998 to 2001, each matched with a US firm.	Earnings response coefficients are lower in foreign firms without ACs compared to matched US firms. Also shows an increase in earnings returns associations for foreign firms after establishing an AC.
Henry (2008) *Journal of Business Finance and Accounting*	An analysis of 116 Australian listed firms, during the period from 1992 to 2002.	The results do not indicate that internal governance factors i.e. the existence of an AC, on an individual basis, substantially impact on firm value.
Brick and Chidambaran (2010) *Journal of Corporate Finance*	Sample consists of a broad panel of 5,228 firm-year observations over a six-year period from 1999 to 2005.	The monitoring activity of the AC has a negative impact on firm value for the sample as whole. However, the results for the sub-periods show that there is a positive impact on firm value for the pre-SOX period but a (non-significant) negative impact in the post-SOX period.
Aldamen et al (2012) *Accounting and Finance*	The sample includes all firms listed on the S&P300 (Australia) during the period of the global financial crisis 2008–2009.	Audit committees financial expertise and external directorships are positively associated with firm performance during the recent global financial crises.
Bolton (2012) *Accounting and Finance*	Final sample consists of 14,576 firm-year observations over a ten year period from 1998 to 2008.	The results show positive and highly significant relationship between audit committee ownership and firm performance.

2.1.4 Audit Committees and the Internal Audit Function

The corporate governance role of the internal audit function goes as far back as 1940 (Gramling *et al.*, 2004), however the renewed and expanded focus on the internal audit function in recent regulatory reports (Smith, 2003; SOX, 2002) has further increased the importance of the role it plays in ensuring the quality of corporate governance. As audit committees are responsible for the monitoring and overseeing of the effectiveness of the internal audit function in the overall financial reporting process, much of the extant research is focused on the interaction between audit committees and the internal audit function, specifically investigating a variety of audit committee characteristics and the quality of internal auditing. Table 2.4 contains details of the key empirical studies in this area.

Cohen *et al.* (2004) argue that a close relationship between the audit committee and the internal audit function improves the governance capabilities of both parties. The stream of research looking at this important relationship has focused on the interaction of these two governance mechanisms from a number of different perspectives; expectations and contributions of each other's role in the corporate governance mosaic (Sarens and Beelde, 2006; Zain *et al.*, 2006; Sarens *et al.*, 2009); audit committee involvement in process issues (Scarbrough *et al.*, 1998; Goodwin, 2003; Gendron *et al.*, 2004); the role of audit committees in negotiating resources for the internal audit function (Carcello *et al.*, 2005; Abbott *et al.*, 2010; Barua *et al.*, 2010); and the association between audit committee characteristics and the disclosure and remediation of internal control weaknesses (Krishnan, 2005; Zhang *et al.*, 2007; Goh, 2009; Hoitash *et al.*, 2009).

The increasing scope and responsibilities of audit committee members in the oversight of the financial reporting process makes the evaluation of audit committee member's perception of their assigned oversight responsibilities even more important. Audit committees perceive internal control evaluations as one of their most important responsibilities in the oversight process (Dezoort, 1997; Cohen *et al.*, 2004), however, the measurement of such perception is not a trivial task. In a US based experimental study involving 87 audit committee members, Dezoort (1998) reports that general

domain (audit) and task specific (internal control) experience is very important for audit committee members as it means these members are not only consistent and insightful in their judgements but also make internal control judgements more like auditors, hence showing the importance of relevant expertise in the oversight of internal control.

The results of a questionnaire survey of chief internal auditors, conducted by Zain *et al.* (2006), showed that audit committees which are independent and have accounting and auditing experience are positively associated with the internal auditors' assessment of their contribution towards external audit. These findings suggest that organisations with appropriately constituted audit committees have the potential to benefit from the contributions made by the internal audit function in terms of financial statement audit. Audit committees always seek the support of the internal audit function in areas such as internal audit control procedures. This is especially the case when companies lack formal risk management systems. The embedded position of internal auditors within a company and their familiarity with the risk management system puts them in a unique position. This places an expectation on them from the audit committees to perform a helpful role in the financial reporting process. Findings from a Belgian case study show that the internal audit function more or less meets the internal control expectations of audit committees (Sarens and Beelde, 2006). Furthermore, the advising, supportive and facilitative role of internal auditors provides a great help and comfort to audit committees in their monitoring and improving internal control and risk management aspects of companies (Sarens *et al.*, 2009).

The bulk of empirical research seeking to investigate the impact of audit committee characteristics on the internal audit process has focused on issues of independence and financial expertise of audit committee members. Moreover, surveys seem to be the methodology of choice in this line of enquiry. Scarbrough *et al.* (1998) surveyed Canadian firms and reported that audit committees composed solely of outside directors meet the chief internal auditor and review the work of the internal auditor more frequently compared to audit committees with employee directors. In a similar vein, Goodwin and Yeo (2001) surveying Singapore firms, found evidence that audit

committees composed solely of independent directors[11] met more frequently and privately with chief internal auditors as compared to their counterparts. Similar findings have also been documented in studies of US firms (Raghunandan *et al.*, 2001) and Australian/New Zealand firms (Goodwin 2003), where the audit committee had at least one member with accounting or finance experience. These studies are thus suggestive of a positive link between audit committee independence and the frequency and privacy of meetings with the internal auditor. The privacy of these meetings enhances and protects the independence of internal auditors, as these internal auditors tend to discuss sensitive issues with audit committee members more freely in the absence of management (Scarbrough *et al.*, 1998; Braiotta, 1999). Moreover, the chances of these meetings being private, increases if audit committee members are equipped with accounting expertise. In addition, the accounting expertise of the audit committee is also strongly associated with periodic reviews of the internal auditors work. Hence, this validates the importance of accounting and finance knowledge by audit committee members in the assessment of work carried out by the firm's internal audit function.

The most discussed procedural issue in the internal audit literature is of meetings between audit committees and internal auditors. On answering 'what goes into these meetings' Gendron *et al.* (2004) suggests that both parties tend to discuss the effectiveness of internal controls, the use of wording and the accuracy of financial statements, and the quality of external audit. Although the overwhelming evidence points to the importance of interaction between these functions, a point of caution must be observed. All these surveys focus only on the views of the internal auditors. It would be interesting to see the perceptions of effectiveness and reliance audit committees and external auditors place on the internal audit function. Prior UK research has pointed to the lack of confidence shown by audit committees in seeking to challenge and question the findings of the internal audit function (Turley and Zaman, 2007). This study acknowledged the limited impact audit committees had on the work

[11] The Best Practices Guide issued by the Singapore Exchange Limited (1999) defines independence as not having a relationship which would interfere with the exercise of independent judgement in carrying out the functions of the committee. Thus, all independent directors must also be non-executives but a non-executive director is not necessarily independent.

plan of the internal audit function and on matters such as internal control and audit. The members of the internal audit function remark that this limited role of audit committees is due to the lack of experience and detailed knowledge. However, the establishment of an informal link between the head of internal audit and the chair of audit committee is shown to be of significant importance as this improves the overall motivation of the head of internal audit function in carrying out its duties in proving their credibility to the audit committee chair as a valuable unit of the firm.

Being an organ of the firm, the credibility or usefulness of the internal audit function is inevitably linked with its objectivity and independence from management. The role of audit committees is also of much importance in strengthening the independence of the internal audit function. Goodwin and Yeo (2001) argue that audit committees provide an independent forum for internal auditors to discuss matters relating to their independence. Issues such as; the functional reporting lines for internal auditors; the use of internal audit function as a training ground for management; and, most importantly, the hiring and firing of the chief internal auditor; have been the subject of prior research. The Institute of internal auditors (IIA, 2004) argue that reporting lines are the ultimate source of internal audit independence and are crucial for good corporate governance. They therefore encourage chief audit executives (CAE) to report directly to audit committees. A recent US survey suggests that lenders perceive that those internal audit departments that report directly to the audit committee are more able to deter and report financial statement fraud than internal audit departments reporting directly to company management (James, 2003). Moreover, no difference in users' perceptions of financial statement and fraud prevention was recorded between in-house and outsourced internal audit functions (James, 2003). However, the use of the internal audit function to train future management personnel was found to be widespread, thus posing a threat to the objectivity of the internal auditor (Goodwin and Yeo, 2001).

Table 2.4: Audit Committee and Internal Audit Function

Author (Date) and Journal	Research Method	Key Findings
Dezoort (1998) *Accounting, Organisations and Society*	An experimental study involving 87 AC members from US firms with and without experience of having completed an internal control oversight task.	This study finds that general and specific experience of AC members is very important as members with experience were consistent in their judgements, were more insightful, and made internal control judgments more like auditors than their counterparts.
Scarborough et al (1998) *Accounting Horizons*	Data was collected by mailing questionnaires to the chief internal auditor of 398 Canadian companies.	48% of ACs were involved in the chief internal auditor dismissal decision, 59% of ACs had 3 or more meetings with the chief internal auditor, and only 69% of ACs reviewed the internal auditor program and its charter.
Goodwin and Yeo (2001) *International Journal of Auditing*	Questionnaires sent to chief internal auditors of both listed and unlisted companies in Singapore (n=65).	A strong relationship was found between the AC and the internal audit function, with the level of interaction being greater when the AC was comprised solely of independent directors.
Raghunandan et al (2001) *Accounting Horizons*	A survey of chief internal auditors of 114 American public companies in 1999.	ACs composed solely of independent directors and with at least one member having an accounting or finance background were more likely to: (1) have longer meetings with the chief internal auditor; (2) provide private access to the chief internal auditor; and (3) review internal audit proposals and results of internal auditing.
Goodwin (2003) *International Journal of Auditing*	A questionnaire survey of 109 chief internal auditors in Australia and New Zealand.	AC independence is associated with a number of issues of process, such as the frequency and length of meetings with internal audit, the privacy of such meetings etc, while accounting experience is associated with the extent that the AC reviews the work of the internal audit function.
James (2003) *Accounting Horizon*	A US based survey study comprising 63 useable survey instruments.	This study finds that in-house internal audit departments that report to senior management are perceived as less able to provide protection against fraudulent reporting compared to in-house departments that report solely to the AC.
Gendron et al (2004) *Auditing: A Journal of Practice and Theory*	22 interviews with CEOs, CFOs, IA and AC chairman as well as AC members in 3 large Canadian firms in 2000/01.	This study highlights the key matters that AC members emphasize during meetings. These matters include the accuracy of financial statements, internal control effectiveness, wording used in the financial reports and the quality of auditors' work.
Carcello et al (2005) *Accounting Horizons*	Survey data from 217 mid size US companies was analysed during 2002.	This study finds evidence of linkage between large IA budget and companies with ACs that review the IA budget. The nature of AC oversight is also associated with the variations in the IA budget.

Author (Date) and Journal	Research Method	Key Findings
Krishnan J (2005) *The Accounting review*	An analysis of 256 US companies between 1994 and 2000 (128 with internal control problems and 128 without problems)	AC independence is negatively associated with the presence of internal control problems. Study also finds a negative relationship between the number of financial experts on the AC and the presence of internal control problems.
Bronson et al (2006) *Auditing: A journal of practice and theory*	An analysis of 397 annual reports filed by medium-sized firms with the SEC at the end of fiscal year 1998.	Study finds that one third of the sample firms issued management report on internal control (MRICs) and a positive association exists between the likelihood of MRICs and size of the firm, AC meetings, and the level of institutional ownership.
Sarens and Beelde (2006) *International Journal of Auditing*	A case study involving 5 multinational firms from Belgium in 2005.	In most cases, internal audit is able to meet the expectations of the AC, expectations that more or less are in line with those of senior management. In most cases the audit committee and senior management have more or less the same expectations with respect to the internal audit.
Zain et al (2006) *International Journal of Auditing*	A questionnaire survey of chief internal auditors of 76 Malaysian listed firms.	Finds a positive relationship between AC characteristics (proportion of independent AC members, knowledge and experience of accounting and auditing, and the extent of AC review of internal audit programmes) and internal auditors' assessment of their contribution to financial statement audits.
Krishnan G and Visvanathan (2007) *International Journal of Auditing*	A sample of 90 firms based on the regulatory filings with the SEC that reported material weaknesses in their internal controls in 2004.	Finds that more active ACs are associated with reporting internal control weaknesses. Also finds that ACs with a smaller proportion of financial experts are more likely to report internal control weaknesses.
Zain and Subramaniam (2007) *Corporate Governance: An International Review*	Using interview data from 11 heads of internal audit function (HIAFs) in 20 randomly selected large listed Malaysian companies in 2003.	HIAFs place significant trust in ACs to take up the key questioning role in more formal settings. Also shows that infrequent informal communications and limited private meetings between the HIAFs and ACs, and a need for clear reporting lines.
Zhang et al (2007) *Journal of Accounting and Public Policy*	An analysis of 208 US firms with material internal control weaknesses between 2004 and 2005.	Firms are more likely to be identified with an internal control weakness, if their ACs have less financial expertise.
Crawford et al (2008) *Public Money and Management*	Questionnaire data collected from 32 Scottish local authorities.	The respondents perceive ACs as being quite effective in monitoring internal audit and the corporate governance framework of organisations. However, ACs were not perceived as being effective in monitoring external audit and risk management.
Christopher et al (2009) *Accounting, Auditing and Accountability Journal*	A critical comparison of questionnaire results (chief audit executives of 34 Australian firms) versus existing literature and best practice guidelines.	AC seems to be creating indirect threats for IA function in a number of ways mainly due to inconsistent compliance with best practice guidance on issues such as IA function's reporting procedure, AC composition, and powers to hire and fire the head of IA function.

Author (Date) and Journal	Research Method	Key Findings
Goh (2009) *Contemporary Accounting Research*	Data from 208 unique US firms that disclosed at least one material weakness from July 2003 to December 2004 under SOX 302.	Firms with more independent boards, larger ACs, and the proportion of AC members with financial expertise (only non accounting), is positively associated with firms' timeliness in the remediation of material weaknesses.
Hoitash et al (2009) *The Accounting Review*	Study sample contains of 5480 firm-year observations and data on 19673 AC members collected between 2004 and 2006 (US).	Finds that both accounting and supervisory expertise are associated with higher quality internal controls. However, AC meetings are positively associated with material weaknesses (MW) and AC size is not associated with MW disclosure.
Naiker and Sharma (2009) *The Accounting Review*	An analysis of 1224 firms using the Compustat database for the 2004 fiscal year.	Study finds that affiliated former audit partners (AFAPs) are negatively associated with performance-adjusted discretionary accruals, and AFAPs appointed to the AC within and after the three-year 'cooling-off' period are negatively associated with ICDs.
Sarens et al (2009) *The British Accounting Review*	Interview data from 4 Belgian companies in 2005, involving internal auditors, chief audit executives and the head of the ACs.	Finds that the internal audit function's advising, supportive and facilitative roles provide reassurance to the AC. For those companies that lack a formal risk management system, the internal audit function's role in formalising the risk management system is also a crucial source of comfort to the AC.
Abbott et al (2010) *Accounting Horizons*	A survey of 134 chief internal auditors from *Fortune* 1000 firms in fiscal year 2005.	Study finds a strong, positive association between AC oversight variable and the amount of IAF budget allocated to internal-controls-based activities.
Barua et al (2010) *Journal of Accounting and Public policy*	An analysis of 181 SEC registrant firms that: (a) responded to a survey, per Carcello *et al.* (2005) and (b) had available data about AC in proxy statements.	Internal audit budget is negatively related to the presence of an auditing expert on the committee and the average tenure of AC members. Internal audit budget is positively related to the number of AC meetings.
Cullinan et al (2010) *International Journal of Auditing*	An empirical analysis of a sample of 243 US firms using data collected from proxy statements in 2004 and 2005.	Results show that firms that have stock option plans for their AC members are significantly more likely to report material weaknesses in their internal control than firms that do not have a stock option plan for AC members.
Sarens and Abdolmohammadi (2011) *International Journal of Auditing*	Analysis of IAF data (questionnaire) obtained from 73 Belgian firms.	This study shows that the proportion of independent board members has a negative effect on IAF size. This study does not find a significant relationship between the AC activity and the relative size of the IAF.
Anderson et al (2012) Accounting Horizons	A survey of 212 public and private US companies from 2007 to 2008.	Audit committee size, audit committee meetings with the chief audit executives and audit committee that approves the internal audit budget has a positive and significant impact on internal audit size.

It has also been argued that the involvement of audit committees in the replacement of the chief internal auditor also reduces the influence of management and consequently adds empowerment to the internal audit function (Scarbrough *et al.*, 1998; Goodwin & Yeo, 2001; Goodwin, 2003). The evidence, however, suggests that audit committees do not always provide sufficient protection to the chief internal auditor against the threat of dismissal as Scarbrough *et al.* (1998) found. This study reported that only 48 per cent of audit committees were involved in the chief internal auditor appointment decision. This percentage improved to 72 per cent for a Singapore survey (Goodwin and Yeo, 2001), but a similar survey in Australia and New Zealand reported a drop in this percentage to 52 per cent (Goodwin, 2003).

The role of audit committees in the allocation of resources to the internal audit function has also been the focus of much attention in recent research. The approval of resources from management can actually hinder the independence of the internal auditor as it limits the scope of the internal audit function. The findings of recent surveys show that audit committees' commitment to monitoring and oversight is positively associated with the size of the internal audit budget (Carcello *et al.*, 2005; Abbott *et al.*, 2010). In addition, research focusing on the impact of audit committee independence (Sarens and Abdolmohammadi, 2011) and auditing expertise (Barua *et al.*, 2010) on internal audit investment suggests that both these characteristics were viewed as alternative monitoring mechanisms and have a substitution effect on the size of the internal audit budget. The study by Barua *et al.* (2010) further found that the frequency of audit committee members meetings was positively related with the size of the internal audit budget, suggesting the diligence of audit committee members is linked to greater demands for high quality internal audit, and hence higher commitment to the financial reporting process . In the same vein, Anderson et al., (2012) while investigating the internal audit resources in terms of the number of internal audit employees found that audit committee size, audit committee meetings with the chief audit executives and audit committee that approves the internal audit budget has a positive and significant impact on internal audit size.

A final area of interest that has attracted the attention of prior research is of the association between audit committee quality and its impact on the disclosure of material weaknesses within a company's internal controls. Audit committees are expected to develop and maintain sound internal controls (BRC, 1999; Carcello *et al.*, 2002) and recent regulatory requirements in the US (SOX, 2002) have made it mandatory for public companies to disclose material weaknesses. Auditing Standard No. 2 defines a material weakness as ''a significant deficiency, or combination of significant deficiencies, that results in more than a remote likelihood that a material misstatement of the annual or interim financial statements will not be prevented or detected.'' The empirical evidence shows that audit committee independence and financial expertise are associated with better internal control quality (Krishnan, 2005; Zhang *et al.*, 2007; Hoitash *et al.*, 2009). The evidence on the accounting and non-accounting expertise of audit committees is rather mixed. Hoitash *et al.* (2009) report that accounting expertise are more important in enhancing internal control quality, however, Goh *et al.* (2009), in another US based study, reported that it is actually the non-accounting expertise of audit committee members that have a positive association with the remediation of internal control problems.

Audit committee meeting frequency and option plans are negatively related with internal control quality (Krishnan and Visvanathan, 2007; Hoitash *et al.*, 2009; Cullinan *et al.*, 2010). However, prior to SOX, (2002), when management reports on internal controls were not mandatory, Bronson et al (2006) reported a positive association between the frequency of audit committee meetings and the inclusion of management reports on internal control in annual financial statements. This suggests that audit committees, that hold more meetings, are more concerned with internal control quality and hence financial reporting quality. An interesting point to note is that all of the above studies which have provided evidence on the association of audit committee characteristics with the quality of internal control are US based. Therefore there is a need for research in other regulatory environments to help understand fully the interaction between audit committee characteristics and the quality of internal control.

2.1.5 Summarising the Governance role of Audit Committees

Over the past twenty years, the governance role of audit committees has received a very significant amount of attention. Much of this has come from regulators who view audit committees as an important governance mechanism with the potential to significantly improve the quality of companies' financial disclosures and, in so doing, ensure greater transparency both for markets and individuals. The academic interest in audit committees has developed in parallel with regulatory developments and the nature of academic enquiry has been greatly influenced by regulators' pronouncements on the use and usefulness of audit committees and their role in the emerging governance mosaic. In particular, the academic literature has moved on from its earlier focus on whether companies possessed audit committees and, if so, what was the impact of their presence on a range of company characteristics and behaviour. More recent work acknowledges that audit committees are now quasi-mandatory in many countries so academic interest has switched to issues such as their composition, their expertise, and their relationships with other elements of governance within firms.

This chapter has sought to review the ever expanding academic literature on audit committees by seeking to segregate the literature into a number of categories. First, the relationship between audit committees and statutory audit was discussed. This begins with a discussion of some work that has attempted to understand what audit committee members themselves understand by the notion of audit quality. Of particular interest here is the association audit committees seem to make between audit quality and both audit tenure and auditor-type. Specifically, there is some evidence that audit committees view length of auditor tenure negatively related to audit quality, while other audit committee members associate audit quality with using one of the large audit firms or, auditors who are perceived as specialists in a particular industry. Overall, there is evidence that more independent and active audit committees may also be more likely to influence auditor selection. A crucial role that audit committees play is in mediating differences between company management and external auditors. The available evidence seems to suggest that audit committees tend to support external auditors on issues of interpretation of standards and disputes

involving the exercise of earnings management by the audit client. The support for auditors seems even stronger when the financial condition of the client company is poor.

A second strand of research looks at the role of audit committees and financial statement quality. There is clear evidence that companies subject to allegations of fraud and related offences by regulators are less likely to possess an audit committee. Furthermore, there is also clear international evidence that more independent, more active and those audit committees with greater expertise are associated with fewer instances of reporting (or alleged) irregularities. A small number of studies have examined the stock market reaction to relevant audit committee announcements. Of interest here is whether investors react positively or negatively to company news. A couple of trends have emerged: the announcement of audit committee formation has a positive stock market reaction; the appointment of members with audit, accounting or finance experience also has a positive announcement effect. Taken together, these findings suggest that investors appreciate the benefits of companies' possessing an audit committee and differentiate the potential contribution of certain member characteristics to future company value.

The final area of research reviewed is the relationship between audit committees and the internal audit function. Research in this field is largely undertaken via surveys and/or interviews, predominantly focusing on the views of internal auditors and their perception of their company's audit committee. Overall, there does seem to be a consensus that more independent audit committees meet more frequently and privately with internal auditors compared to less independent ones. There is also some evidence that audit committees with greater financial expertise have a better on-going interaction with the internal audit function. A further issue in this research is the extent to which the internal audit function is independent from company management, ideally reporting and accountable to the audit committee. There is also a related issue of resourcing the internal audit function with strong support for the link between a better resourced internal audit function and higher quality internal auditing being undertaken. Finally, there is evidence that more independent audit committees

and those with greater levels of accounting/finance experience are associated with more effective internal auditing.

2.2 Financial Reporting Quality

This section examines the empirical literature related to financial reporting quality and provides a general overview of both audit quality and earnings quality. Financial reporting quality is linked to two main aspects; ensuring the audit itself is of good quality and the quality of the reported earnings is of acceptable standard. This section therefore explains both audit quality and earnings quality as components of financial reporting quality. Each of the sections firstly provides an overview of the concept and then explains how they relate to the role of audit committees.

2.2.1 Audit Quality

Audit quality has been defined as the joint probability that an existing material error is detected and reported by an auditor (DeAngelo, 1981). As this has a direct impact on the financial reporting, audit quality can further by defined as the ability of an auditor to provide an independent audit free from misstatement, error and fraud. Moreover, Watkins *et al.* (2004) provide a comprehensive overview of the different ways in which audit quality has been defined in the prior literature. It is viewed as, the accuracy of the information reported on by auditors (Davidson and Neu, 1993); the probability that an auditor will not issue an unqualified report for statements containing material errors (Lee *et al.*, 1999); and the market assessed probability that the financial statements contain material errors and that the auditor will discover and report them (DeAngelo, 1981).

There are a number of factors which can affect the quality of an audit, FRC (2008) suggest these could be (a) the culture within the audit firm, (b) skills and personal qualities of audit partners and staff, (c) the audit process, (d) usefulness of the audit reporting and (e) factors outside the control of the auditors. The GAAP outlines important elements such as competence, independence and exercise of due professional care as measures for the quality of the external auditor's performance. Wooten (2003) also notes that audit firms, audit teams and professional judgement

are central elements to audit quality. Consequently, audit quality has a very multi-dimensional nature and cannot be understood with reference to a single factor. It is not easily defined or observable even for those actors who are very close to the audit process (Simunic and Stein, 1987; Balsam *et al.*, 2003; Lin and Hwang, 2010).

Due to its complex and unobservable nature a key issue in audit quality literature has been identifying the methods of measuring audit quality. A number of proxies have been devised that can help operationalise audit quality. A common proxy that has been used is identifying the brand name of the audit firm, i.e. if the audit firm is one of the 'big 4' auditing firms, equating brand reputation with better quality audits. With Clarkson and Simunic (1994) suggesting that in this instance audit quality and auditor quality becomes synonymous. However, this has been refuted by Balsam *et al.* (2003) who argue that because auditor quality is multidimensional and inherently unobservable, no single auditor characteristic can be used to proxy for it. This argument suggests that a number of different factors should be considered when examining proxies for audit quality.

In addition to examining effects of brand name (e.g. Becker *et al.*, 1998; Francis *et al.*, 1999; Lin *et al.*, 2006; Bédard *et al.*, 2004; Davidson *et al.*, 2005), prior studies have examined the effects of industry specialization, auditor tenure, provision of various services by the auditor and auditor independence (e.g. Beattie and Fearnly, 2002; Frankel *et al.*, 2002; Chung and Kallapur, 2003, Raghunandan *et al.*, 2003; Zaman *et al.,* 2011) on a number of issues directly or indirectly related to financial reporting (Lin and Hwang, 2010). This thesis breaks down audit quality in terms of the effort of the auditor and the independence of the auditor, or in other words, as the probability that an auditor (a) detects errors and (b) reports detected errors. This is consistent with Caramanis and Lennox (2008, p116), who noted "audit effort affects the probability that the auditor detects an existing problem, whereas auditor independence affects the probability that the auditor reports a detected problem". The following sections provide a brief overview of auditor effort and auditor independence.

2.2.1.1 Audit Effort (audit fees)

The probability that an auditor detects any material errors can be directly linked to the audit effort, i.e. the amount of time, scope, coverage and resources contributed to detecting such errors. Although, it is extremely difficult to measure effort expended, Caramanis and Lennox (2008) tested the effect of audit effort in terms of hours worked on audits in Greece. However, this approach is difficult to apply in the UK due to unavailability of large datasets of audit hours. A more common proxy for audit effort is linked to the amount of audit fees paid. If the level of conflict is high between management and owners, then there may be greater demand for audit to be of high quality (Watkins, *et al.* 2004). Consequently, this suggests that more effort may be expended and more costs (e.g. audit fees) may be incurred by the firm in ensuring this high quality audit (Simunic, 1980; Craswell *et al.,* 1995; Ferguson and Stokes, 2002). Moreover, it has been empirically tested that audit fees have a positive relationship with planned audit quality (Elitzur and Falk, 1996) and higher audit fees increase the auditor's effort and result in a higher audit quality (Hoitash *et al.,* 2007).

2.2.1.2 Auditor Independence (non-audit fee ratio)

Auditor independence is an important issue which has been examined extensively within studies of audit quality. Auditor independence is fundamental to public confidence in the reporting and auditing process as well as the reliability of the auditors' report (Turley *et al.,* 2011). Yet, it is a very elusive and intangible concept, and has often been described as a 'state of mind' rather than in practical terms (Page and Spira, 2005). Due to its indefinable characteristics, regulatory authorities have provided numerous code of ethics and professional codes of conduct for their members to abide by, in the hopes to maintain independence. As a result, measures of independence are also equally as difficult to find. An important proxy for measuring auditor independence has been the purchase of non-audit services and the corresponding non audit fees. The argument for using this proxy is that the provision of non-audit services can create dependence on the auditor, which can then hamper auditor independence. Although, critics of this argument would suggest the provision of non-audit services allows economic benefits especially when knowledge of the business gained during the provision of non-audit services can be transferred in

delivering an efficient audit and vice versa (Porter *et al.,* 2003; Simunic, 1984). It must be stated that most companies purchase non audit services, therefore their existence is in itself not an issue. The concern is the amount that is spent on these non audit services and the subsequent ratio of non-audit fees in relation to audit fees. Although Beattie and Fearnly (2002) argue there is very little support for the view that joint provision of audit and non audit services impairs independence, they also agree that joint provision adversely affects the perception of independence; hence the ratio of non-audit fees to audit fees can be regarded as a measure of perceived independence of the auditor.

2.2.2 The Role of Audit Committees in Maintaining Audit Quality

The literature on the relationship between certain audit committee characteristics and audit fees has shown mixed results. This variation may be due to the perceived dual role of audit committees (Collier and Gregory, 1996). In order to protect their reputational capital (Carcello *et al.*, 2002b), audit committees enhance the quality of financial reporting through their choice of quality auditors (Abbott and Parker, 2000) or by increasing the scope and coverage of audit work (Abbott *et al.*, 2003a), this inevitably results in higher audit fees. In the same vein, audit committees are also responsible for strengthening the internal control procedures of companies (Wallace, 1984; Collier, 1992) through improvements in the internal audit function. This role should in contrast, reduce the work done by the external auditor and thereby result in lower fees.

The literature has found there to be a multitude of relationships between the different characteristics of audit committees and audit fee. Some studies have shown positive links between specific audit committee characteristics such as; size (Abbott *et al.*, 2003a; Vafeas and Waegelein, 2007; Hoitash and Hoitash, 2009; Zaman *et al.*, 2011), independence (Abbott *et al.*, 2003a; Carcello *et al.*, 2002; Mitra *et al.,* 2007; Zaman *et al.*, 2011) and expertise (Carcello *et al.*, 2002; Abbott *et al.*, 2003a; Vafeas and Waegelein, 2007; Hoitash and Hoitash, 2009; Zaman *et al.*, 2011; Engel *et al.*, 2010) and the audit fee. This correlates with the view that an audit committee with these characteristics is likely to seek a higher level of audit assurance and thereby could

demand a greater level of audit coverage resulting in higher audit fees. The expertise of audit committee members have been analysed from different perspectives in the extant literature. These measures include; governance expertise i.e. audit committee members with experience of serving on another audit committee (Vafeas and Waegelein, 2007), financial expertise i.e. broader definition of financial expertise provided by SEC (Carcello *et al.*, 2002; Abbott *et al.*, 2003a; Hoitash and Hoitash, 2009; Zaman *et al.*, 2011), accounting financial expertise (Krishnan and Visvanathan, 2009; Hoitash and Hoitash, 2009), and non accounting and supervisory financial expertise (Krishnan and Visvanathan, 2009; Hoitash and Hoitash, 2009).

The literature on the impact of audit committee expertise on audit fee shows that audit fees are positively associated with audit committee members with experience of serving on another audit committee (Vafeas and Waegelein, 2007), financial expertise (Carcello *et al.*, 2002; Abbott *et al.*, 2003a; Hoitash and Hoitash, 2009; Zaman *et al.*, 2011), accounting financial expertise (Hoitash and Hoitash, 2009), and supervisory financial expertise (Hoitash and Hoitash, 2009). In contrast, Krishnan and Visvanathan (2009) found financial expertise to be negatively related to audit fee, when the definition of expertise is restricted to accounting financial expertise. They argue that auditors see the accounting financial expertise of the audit committee members as mitigating the control risk and audit risk and hence result in lower audit fee. More recently Chan et al., (2012) have also documented a negative association between the proportion of audit committee members serving longer on the board and audit fee. The findings in relation to audit committee diligence show that audit committee meetings has a positive and significant impact on audit fees (Goodwin and Kent, 2006; Hoitash and Hoitash, 2009; Engel et al., 2009). However in some other studies no links have been found between the number of meetings audit committees hold and the audit fee (Abbot *et al.*, 2003a; Carcello *et al.*, 2002). Moreover, O'Sullivan (1999) also found no link between corporate governance mechanisms such as board and audit committee characteristics and auditors' pricing decisions.

The role of audit committees in the provision of non-audit services is also of key interest in recent research. Arthur Levitt (Levitt, 2000), former chair of the SEC,

expressed his concerns on the provision of non audit services when he stated "consulting and other services shorten the distance between the auditor and management" and therefore have a direct negative impact on auditor independence. Audit committees are responsible for ensuring auditor independence and therefore are directly or indirectly involved in the decisions taken with regards to the provision of non-audit services. Abbott *et al.* (2003b), in an analysis of 538 US firms, note that audit committees which are fully independent and hold at least four meetings every year are associated with lower non-audit fee ratio. In another study, Hoitash and Hoitash (2009) found that audit committee size and meetings frequency is negatively associated with non-audit fee ratio. These findings suggest that non-audit fees authorized by stronger audit committees lead to a smaller proportion of non audit fees in relation to audit fees. Zaman *et al.* (2011), while examining UK evidence, note a negative association between independence and expertise of audit committees and non-audit fees. This suggests that certain audit committee characteristics perceive a high level of non-audit services fees in a negative light. However, Zaman *et al.* (2011), while measuring the association between audit committee effectiveness[12] and non audit services fee, noted that audit committees of larger clients are positively associated with non-audit services fees. This finding raises an important question as to whether complex activities of larger clients are the determinants of the provision of higher non-audit services fee or audit committees in the UK are less concerned about the perceived impact on auditor independence.

It has further been suggested that audit fees are higher when a company has an audit committee, discloses higher levels of financial risk management and lower levels of compliance risk management (Knechel and Willikens, 2006). Furthermore the extent of regulation within a firm also plays a key role in the audit fees paid out, with suggestions that regulated companies have lower audit fees and also exhibit a weaker association between audit fees and audit committee independence and size (Boo and Sharma 2008). These findings are consistent with the notion that regulatory oversight partially substitutes the external audit as a monitoring mechanism in those companies.

[12] This is a composite measure of audit committee size, independence, expertise and meeting frequency.

2.2.3 Earnings Quality

Earnings quality refers to the quality of the reported earnings numbers. Since the worth of a company is directly related to its reported earnings figures, top management view earnings management as a device to meet earnings expectations for their companies (Loomis, 1999). Earnings management has always been a major concern and a central element of major regulatory reforms around the world (AARF, 1997; BRC, 1999; Smith, 2003). Former US Securities and Exchange Commission (SEC) Chairman, Levitt (1998), expressed his serious concerns over earnings management in his famous "the Numbers Game" speech. He called for a fundamental cultural change for corporate management and strengthening corporate governance, especially by improving the effectiveness of audit committee.

Schipper (1989, p 368) defines earnings management as 'a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain'. Similarly, Mulford and Comiskey (1996, p 360) note that 'earnings management is the active manipulation of accounting results for the purpose of creating an altered impression of business performance', with the SEC (1999, p 3) saying it is: 'the practice of distorting the true financial performance of (a) company. Likewise Healy and Wahlan (1999, p 368) explain earnings management as management using 'judgement in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers'. Although there may be some differences on the exact definition of earnings management, the main essence of the above definitions is that managers tend to report earnings as they wish rather than as the true financial position of a firm. For that reason, reported earnings in the financial statements do not reflect the actual underlying economic substance of the firm. This also suggests that accruals accounting plays an important role in earnings management, as it relies on assumptions and management judgement to provide information on the economic performance of the firm. Consequently, from an agency perspective, earnings management can be linked to the opportunistic behaviour of management (Healey and Wahlen, 1999).

The actual practice of earnings manipulation can either be linked to the choice of accounting methods, or the use of discretionary accruals. The former can involve the manipulation of; revenue recognition methods, inventory cost calculations, research and development or investment accounting. The latter is linked to the manipulation of accruals, e.g. provisions for doubtful accounts and obsolete inventories, deferred tax and variation in the useful economic life of depreciated long-term assets. Management may have a number of reasons for engaging in the manipulation of earnings with Healy and Wahlen (1999) identifying three main situations, namely, capital market, manager's contracts written in terms of accounting numbers and political and regulatory requirements. These are discussed below.

2.2.3.1 Earnings Management Motivations

Capital market motivations are linked to a desire to prevent earnings losses, boost expectations and influence share prices (Burgstahler and Dichev, 1997; Barth *et al.,* 1999). Healy (1985) found that management had an economic incentive to manipulate earnings if this had a direct impact on their cash compensation. This often occurs in instances where the performance of the firm is linked to managerial compensation. In addition, capital market incentives for manipulations can also occur at the time of initial public offerings (Teoh *et al.,* 1998a; Yoon and Miller, 2002) and prior to stock mergers (Erickson and Wang, 1999).

Contract motivations occur when management seek to manipulate the terms of compensation contracts between themselves and others to their advantage. To limit agency problems and constrain management opportunistic behaviour, firms often have a multitude of contracts between shareholders and managers, as well as lending agreements and debt covenants between managers and lenders. These contracts are often tied to accounting numbers, whereby management are encouraged to increase earnings and receive increased cash compensation in return (Healy, 1985). This could also lead management to transfer earnings to the next accounting period if their earnings exceed their compensation target (Holthausen *et al.,* 1995). In contrast, although prior research on accounting choices motivated by debt covenant concerns has been found to be inconclusive by Fields *et al.* (2001), a more recent study by

Beatty and Weber (2003) found convincing evidence that borrowers are more likely to make income increasing rather than income-decreasing changes in light of debt covenants.

Political and regulatory motivations are also an important consideration. Corporate firms have a multitude of regulation, i.e. tax laws etc, they must abide by and a number of oversight bodies. Often, this scrutiny of a firm begins with its accounting numbers (Revsine *et al.,* 2002) and putting pressure on firms to smooth their income. Watts and Zimmerman (1978) argue that firms had an incentive to manage earnings in a downward direction to avoid anti-trust investigations or other adverse political consequences. This is consistent with Cahan (1992) who found firms under investigation for anti-trust violations reported income-decreasing abnormal accruals in the investigation years. Similarly, Black *et al.,* (1998) found strong evidence of earnings management in the UK before the changes in the accounting standard on asset revaluation.

2.2.3.2 Measurement of Earnings Management

There are a number of ways that have been used to measure earnings management in the prior literature such as transfer pricing (Lo *et al.*, 2010) and accounting conservatism (Krishnan and Visvanathan, 2008) however the most prominent measure of earnings management has been the use of accruals based earnings management models (Bedard *et al.*, 2004; Peasnell *et al.*, 2005; Vafeas, 2005; Dhaliwal *et al.*, 2010; Ghosh *et al.*, 2010). Accrual accounting provides important and useful information on companies' financial performance however the process itself is based on assumptions such as judgement and accounting discretion. Managers use accruals to estimate earnings, as firstly any subsequent change in the accruals estimation does not require the restatement of financial statements; and secondly, it is difficult for external auditors to label 'judgement' as a wilful act to manipulate earnings.

Healey (1985) developed the initial accruals based method of measuring earnings management. He assumed systematic earnings management occurred in every period and defined accruals as the difference between reported earnings and cash flow from

operations. This model was subsequently built on by a number of researchers (see DeAngelo, 1986 and Dechow and Sloan, 1991), the most notable of which was the model presented by Jones (1991) as it controlled for changes in a firms economic conditions by accounting for both discretionary and non-discretionary components. The model assumed that while sales growth controls a firm's non-discretionary working capital, the level of property, plant, and equipment controls the firm's non-discretionary depreciation expense (Bernard and Skinner, 1996). Jones (1991) first developed a proxy to detect earnings management. This model has been subsequently built upon by a number of other studies. Jones (1991) calculated the discretionary and non-discretionary components of accruals by proposing the following formulae:

$$TA_{i,t}/A_{it-1} = \alpha_i[1/A_{it-1}] + \beta_{1i}[\Delta REV_{it}/A_{it-1}] + \beta_{2i}[PPE_{it}/A_{it-1}] + \varepsilon_{i,t} \quad (1)$$

[Where: $TA_{i,t}$ = Total accruals in year *t* for firm *i*; Total Accruals = net income after extraordinary items – net cash flow from operations; A_{it-1} = Total assets in year *t* - 1 for firm *i;* ΔREV_{it} = Revenues in year *t* less revenues in year *t* - 1 for firm *i;* PPE_{it} = Gross property, plant and equipment in year *t* for firm *i*; $\varepsilon_{i,t}$ = Error term in year *t* for firm *i.*]

The firm specific coefficients are generated by using ordinary least squares regression for equation (1). Jones (1991) used these firm specific coefficients for $\alpha_{i,}$ β_{1i} and $\beta_{2i.}$ to estimate the level of non-discretionary accruals for each sample firm using the following model:

$$NDA_{it} = a_i[1/A_{it-1}] + b_{1i}[\Delta REV_{it}/A_{it-1}] + b_{2i}[PPE_{it}/A_{it-1}] \quad (2)$$

[Where; NDA_{it} = Non-discretionary accruals in year *t* for firm *i*; A_{it-1} = Total assets in year *t* - 1 for firm *i;* ΔREV_{it} = Revenues in year *t* less revenues in year *t* - 1 for firm *i;* PPE_{it} = Gross property, plant and equipment in year *t* for firm *i.*]

The above calculated non-discretionary accruals are then used in the equation (3) given below to estimate the discretionary component of accruals. This value is used as a proxy for the extent of earnings management.

$$DA_{it} = TA_{i,t}/A_{it-1} - NDA_{it} \quad (3)$$

[Where: $DA_{i\,t}$= Discretionary accruals in year *t* for firm *i;* $TA_{i,t}$ = Total accruals in year *t* for firm *i*; A_{it-1} = Total assets in year *t* - 1 for firm *i;* NDA_{it} = Non-discretionary accruals in year *t* for firm *i* from equation (2).]

Four years later, Dechow *et al.* (1995) made an adjustment to the above Jones (1991) model and proposed that a change in receivables be also included in the test period of the estimation of the level of non-discretionary accruals. The original Jones model assumed that all the revenues are non-discretionary but Dechow *et al.*, (1995) argued that managers are more likely to manipulate account receivable amounts (credit sales) as compared to cash sales. This new version of the model (equation 4) is as follows.

$$TA_{i,t}/A_{it\text{-}1} = a_i[1/A_{it\text{-}1}] + b_{1i}[\Delta REV_{it} - \Delta REC_{it}/A_{it\text{-}1}] + b_{2i}[PPE_{it}/A_{it\text{-}1}] \qquad (4)$$

[Where: $TA_{i,t}$ = Total accruals in year *t* for firm *i*; Total Accruals = net income after extraordinary items – net cash flow from operations; $A_{it\text{-}1}$ = Total assets in year *t* - 1 for firm *i;* ΔREV_{it} = Revenues in year *t* less revenues in year *t* - 1 for firm *i;* ΔREC_{it} = Net receivables in year *t* less net receivables in year *t* - 1 for firm *i;* PPE_{it} = Gross property, plant and equipment in year *t* for firm *i.*]

A decade later Kothari *et al.*, (2005) suggested that by controlling for a firm's return on assets (ROA) the modified Jones model could be further improved. The proposed addition reflects in the formula as follows;

$$TA_{i,t}/A_{it\text{-}1} = a_i[1/A_{it\text{-}1}] + b_{1i}[\Delta REV_{it} - \Delta REC_{it}/A_{it\text{-}1}] + b_{2i}[PPE_{it}/A_{it\text{-}1}] + [ROAt] \qquad (5)$$

[Where: $TA_{i,t}$ = Total accruals in year *t* for firm *i*; Total Accruals = net income after extraordinary items – net cash flow from operations; $A_{it\text{-}1}$ = Total assets in year *t* - 1 for firm *i;* ΔREV_{it} = Revenues in year *t* less revenues in year *t* - 1 for firm *i;* ΔREC_{it} = Net receivables in year *t* less net receivables in year *t* - 1 for firm *i;* PPE_{it} = Gross property, plant and equipment in year *t* for firm *i;* ROA = Return on assets in year *t.*]

The Jones (1991) model and its variations had faced criticism by researchers for not capturing true earnings management (Bernard and Skinner 1996; Guay *et al.*, 1996; Hansen, 1999; Schipper and Vincent, 2003; Francis *et al.*, 2005). In response Dechow and Dichev (2002) developed another model to capture earnings quality, this time using the association between the current period working capital accruals and operating cash flows from different time periods. This measure defines the quality of accruals as the extent to which they map into past, current, and future cash flows;

$$\Delta WC_t = b_0 + b_1 CFO_{t\text{-}1} + b_2 CFO_t + b_3 CFO_{t+1} + \varepsilon_t \qquad (1)$$

[Where Δ in working capital in year t (ΔWC_t) = ΔAccounts receivable + ΔInventory - ΔAccounts payable - ΔTaxes payable + ΔOther assets (net), this can also be calculated as (ΔCurrent Assets – ΔCurrent Liabilities) – ΔCash; $CFO_{t\text{-}1}$ represents 'Cash flows from operations in year *t* – 1'; CFO_t represents 'Cash flows from operations in year *t*' and CFO_{t+1} represents 'Cash flows from operations year in year *t* + 1'.]

The Dechow and Dichev (2002) model uses the standard deviation of residuals as a firm-level measure of accruals and earnings quality: with a low standard deviation representing a high match between accruals and cash flows and, hence high quality accruals and earnings. Building on this model McNichols (2002) argued the inclusion of two variables from the original Jones (1991) model would strengthen both models and provide a more robust measure of earnings quality. These two extra variables were the change in current sales and the level of property plant and equipment. Her model did indeed find that this modified approach provided more explanatory power to each of the models. The proposed McNichols (2002) model is as follows;

$$\Delta WC_t = b_0 + b_1 CFO_{t-1} + b_2 CFO_t + b_3 CFO_{t+1} + b_4 \Delta Sales_t + b_5 PPE_t + \varepsilon_t \quad (2)$$

[Where Δ in working capital in year t (ΔWC_t) = ΔAccounts receivable + ΔInventory - ΔAccounts payable - ΔTaxes payable + ΔOther assets (net), this can also be calculated as (ΔCurrent Assets – ΔCurrent Liabilities) – ΔCash; CFO_{t-1} represents 'Cash flows from operations in year t – 1'; CFO_t represents 'Cash flows from operations in year t' and CFO_{t+1} represents 'Cash flows from operations year in year t + 1'; $\Delta Sales_t$ represents 'Sales in year t – Sales in year t – 1' and PPE_t represents 'Gross property, plant and equipment in year t'. All variables shown above are scaled by total assets.]

This measure captures both biased ''discretionary'' accruals and unintentionally poorly estimated accruals, hereby disregarding management intent in measurement of accruals. Francis *et al.*, (2005) using several indicators of the firm's business environment proposed a new model and separated McNichols measure of earnings management into its discretionary and non-discretionary elements. Francis *et al.* (2005) compute the components of accruals (i.e. both discretionary and non-discretionary) by estimating a regression of firms' innate factors affecting accruals quality. To determine the discretionary components of accruals quality, the regression equation is as follows;

$$AQ = \alpha + b1SIZE + b2\ LOSS + b3OPCYC + b4\sigma CFO + b5\sigma REV + e_t \quad (2)$$

[where AQ is the accruals quality (absolute value of accruals quality from equation 1); SIZE is the natural log of total assets, ; LOSS is the number of years in which a loss was recorded for last three years; OPCYC is the natural log of average age of inventory plus the average age of receivables (in days), σCFO is the standard deviation of cash flow from operation over last five years (scaled by total assets) and σREV is the standard deviation of operating revenue over the last five years (scaled by total assets).]

Overseeing the financial reporting process and more specifically maintaining the integrity of the financial statements is the fundamental responsibility of the audit committee. Consequently, an effective audit committee should deter management from making intentional errors and also motivate management to exercise greater care in reducing unintentional errors, resulting in higher accruals quality (Dhaliwal *et al.* 2010). Therefore for the purpose of this study, the composite model put forward by McNichols (2002) and Francis *et al.*, (2005) model are being utilised as proxies for earnings quality.

2.2.4 The Role of Audit Committees in Maintaining Earnings Quality

Much of the research in this area has sought to examine the impact of various characteristics of audit committees on doctored records, by developing and empirically examining a variety of proxies for earnings management. These proxies typically include the use of various accruals based measures such as income increasing or decreasing accruals (Bedard *et al.*, 2004; Peasnell *et al.*, 2005; Vafeas, 2005), absolute accruals (Osma and Noguer, 2007; Baxter and Cotter; 2009), quarterly accruals (Yang and Krishnan, 2005) and intentional and unintentional accruals (Kent *et al.*, 2010). Other measures used in the archival research are Penman and Zhang's score (Krishnan and Visvanathan, 2008) and transfer pricing manipulations (Lo *et al.*, 2010).

The three most discussed characteristics of audit committees in the empirical literature are the independence of audit committees; the number of meetings they hold annually and their financial expertise. The evidence from the earnings management literature shows that audit committee independence levels (Lo *et al.*, 2010; Kent *et al.*, 2010; Koh *et al.*, 2007; Vafeas, 2005; Yang and Krishnan, 2005; Davidson *et al.*, 2005; Bedard *et al.*, 2004; Xie *et al.*, 2003; Klein, 2002), and its financial expertise (Lo *et al.*, 2010; Krishnan and Visvanathan, 2008; Bedard *et al.*, 2004; Xie *et al.*, 2003) has a positive influence on firms earnings quality[13]. Other studies, such as Baxter and Cotter, 2009; Piot and Janin, 2007; Osma and Noguer, 2007; have failed to report any such impact of these characteristics. An overarching picture that emerges from these studies is that all US based studies show very strong support for earnings

[13] Earnings quality is inversely related to earnings management.

quality. However the impact of these characteristics on earnings quality in other corporate environments, mainly from Australia, is more mixed.

In addressing the controversial question of 'what constitutes a financial expert', Dhaliwal *et al.,* (2010) analysed 770 firms between 2004 and 2006. They highlighted that accounting experts who fulfil the criteria of being independent, recently appointed and less busy, have a profound positive impact on accruals quality. This study also highlights the role of finance experts in complementing accounting experts. However, in the same study, supervisory experts were seen to be of no use in assisting accounting or finance experts in constraining earnings management. Similar findings were reported in another study by Krishnan and Visvanathan (2008) who examined S&P 500 firms. They reported a positive association between accounting expertise and earnings quality and conservatism, a core property of financial statements. The literature examining the association between different dimensions of financial expertise with financial reporting quality has mainly used the definition provided by the SEC in which an audit committee member is deemed to be a financial expert if the member has: (a) accounting expertise, from work experience as a certified public accountant, auditor, chief financial officer, financial controller, or accounting officer; (b) finance expertise, from work experience as an investment banker, financial analyst, or any other financial management role; or (c) supervisory expertise, from supervising the preparation of financial statements (e.g., chief executive officer or company president).

In addition to the above attributes, prior research has also provided evidence of the impact of other audit committee variables on the likelihood of earnings management. With regards to mere existence, earlier studies have found there to be no association (Klein, 2002; Davidson *et al.*, 2005; Peasnell *et al.,* 2005) however more recent evidence suggests a negative relationships exists between audit committee existence and earnings management (Baxter and Cotter, 2009; Piot and Janin, 2007). Board members' experience on other boards has been the focus of much academic attention (O'Sullivan, 2005; 2009), with Useem (1984) arguing it broadens directors' experience. Similarly, this review also highlights the specific importance of other directorships held by the audit committee members in constraining earnings management practices

(Yang and Krishnan, 2005; Vafeas, 2005). In a similar vein, governance expertise gained by serving longer on the same board was also found to have a positive impact on the earnings quality of a firm (Yang and Krishnan, 2005).

The two most disputed variables found in prior work are audit committee size and extent of activity. The literature on the relationship between audit committee size and earnings management has shown no evidence of an association (Baxter and Cotter, 2009; Davidson *et al.*, 2005; Bedard *et al.*, 2004). The exception is an Australian study where Kent et al (2010), while examining 302 Australian listed firms, reported that larger audit committees are linked with higher earning quality. Other studies linking the frequency of audit committee meetings and their impact on earnings management have also shown mixed results. Some studies such as Kent *et al.*, (2010); Koh *et al.*, (2007); Vafeas, (2005); and Xie *et al.*, (2003) have documented a negative association between meeting frequency and earnings management while studies such as Baxter and Cotter, (2009); Davidson *et al.*, (2005); and Bedard *et al.*, (2004) did not find any association between these variables.

2.3 Summary

From the earlier discussion on financial reporting quality, it can be seen that much work has investigated the relationship between audit committees and the company's external auditor. Two aspects of this have attracted most attention: the link with audit fees and the extent of non-audit services simultaneously purchased from the auditor. The findings in respect of the impact of audit committees on audit fees are very mixed, with audit committee characteristics having both positive and negative impacts depending on both the jurisdiction and time period being studied. Of course, the reported findings may actually reflect the double-edged nature of the expected relationship, in any case, with arguments linking strong and independent audit committees with both a greater and lesser demand for auditing. It appears from the available evidence that more independent audit committees and committees that meet more frequently are associated with lower non-audit fees, suggesting a greater anxiety to safeguard the independence of the audit process through keeping a vigilant watch on the mix of audit and non-audit services purchased from auditors.

Furthermore, a vast majority of research also focuses on the link between audit committees and their characteristics and the incidence and nature of earnings management. There is significant evidence that more independent audit committees and those with greater accounting/financial expertise have a positive impact on earnings' management quality. There is also evidence that positive audit committee attributes do encourage better quality interim and annual financial reporting. The audit committee can therefore directly influence financial reporting quality in terms of both ensuring quality audits and the quality of the earnings.

CHAPTER 3: RESEARCH METHOD

3.0 Introduction

This chapter presents the research method employed in the study. The chapter begins by explaining the theoretical paradigm in which this thesis is located. This section discusses the use of agency theory as a basis for understanding the role of corporate governance and its assumptions which underpin the present research. The chapter also outlines the research question to be investigated and discusses the development of the specific hypotheses this study is seeking to investigate. This draws heavily from the literature reviewed in the previous chapter in establishing an academic rationale for the various aspects of enquiry being pursued. In particular, hypotheses related to financial reporting quality and audit committee size, expertise, independence, meetings, tenure, share ownership, busyness and overall effectiveness are presented. Once the hypotheses are outlined and justified an explanation and justification for choice of sample is outlined and the principal sources of data for the study are explained. Since this is a quantitative empirical study, a significant portion of this chapter is devoted to identifying and justifying the dependent and independent variables used in the subsequent empirical analysis. The chapter explains in detail how the dependent variables (i.e. financial reporting quality) are measured, both in terms of audit quality and in terms of earnings quality. The measurement of independent variables are also discussed here (i.e. audit committee size, expertise, meetings, independence, tenure, share ownership, busyness and audit committee effectiveness. The chapter concludes with an explanation of the regression models employed to examine audit committee characteristics and both audit quality and earnings quality. For audit quality, audit effort is measured using audit fee paid to the auditor and audit independence is measured using the audit to non-audit fee ratio. For earnings quality, this study employs McNichols (2002) and Francis *et al.,* (2005) models as its measures of earnings quality. The statistical techniques used in the univariate and bivariate analysis are also explained.

3.1 Research Paradigm

The corporate governance model stems from the original work of Berle and Means (1932), who examined the separation of ownership and control in listed companies. This model of corporate governance and subsequent research focused on resolving conflicts of interest between corporate management and shareholders (Jensen and Meckling, 1976) and has largely adopted an agency theory approach. Agency theory contextualises the relationship between owners (principals/shareholders) and management (agents) as a conflict of interests, which arises because the managers are not owners. The theory rationalises that corporate managers are self-serving, individualistic and opportunistic in nature, are motivated by their own personal interests and hence exploit the firm for their own interests rather than working for the interests of shareholders and focusing on maximising shareholder wealth. As a result, there is almost always a divergence of objectives between the goals of the management and those of the shareholders. Therefore, agency theory posits that to reduce any 'agency costs' associated with this conflict of interests, owners/ shareholders need to impose strict monitoring controls over management to protect their own interests. Such agency problems are known to exist in diversification and investing decisions and in decisions relating to mergers and acquisitions (Lane et al, 1998).

One of the major causes for this agency problem is due to the information asymmetries which exist between the two parties. Information asymmetry exists because management are more closely involved in the business and for a longer time than the owners and thus have more information about the business than its owners individually (Aboody and Lev, 2000). Hence, differences in the nature and scope of information between the two parties exacerbate agency problems. The existence of information asymmetries result in two major agency problems, namely, moral hazard and adverse selection. Moral hazard is linked to hidden actions; as owners cannot observe management actions and this situation gives agents the opportunity to undertake self-interested behaviour, often the consequence of which is suboptimal decision making on the part of managers. Adverse selection on the other hand is linked

to owners hiring agents who do not have the adequate skills or expertise to sufficiently carry out their role.

A number of mechanisms have been devised to reduce agency problems and negate their impact on firms. Jensen and Meckling (1976) suggest that agency problems can be reduced by incurring agency costs, which consist of bonding costs and monitoring costs. Bonding costs are those which are incurred due to the contract between owners and management. These mechanisms include incorporating numerous restrictive clauses into the contracts between agents and owners and using incentives, in particular linking management performance to compensation and providing other incentives and company benefits to enhance performance. These well designed compensation contracts can also help align manager and owner objectives, Mallin (2013, p198) argues that "share options and other long term incentives are a key mechanism by which shareholders try to ensure congruence between directors' and shareholders' objectives". Monitoring costs are the costs that are incurred during the course of implementing various governance mechanisms over agents. These costs occur due to appointing appropriate oversight functions, both externally, such as external auditors, or internally, including the board of directors, the internal audit function, and various board committees. Within a corporate entity, the board of directors acts on behalf of shareholders by representing their interests and overseeing the activities of management. They are the primary decision makers and have the power to compensate entire decisions made by top management (Fama and Jensen, 1983). It has been argued that the role of the board is best explained by agency theory, as not only it clarifies the function of the board of directors (Zahra and Pearce, 1989), it also highlights the importance of their monitoring role (Hung, 1998).

The Audit Committee has been featured considerably in recent discussions on corporate governance and has emerged as the main sub-committee of the board with the remit of ensuring accountability and integrity in the reporting functions of the firm. Pincus et al. (1989, p265) looked at the creation of audit committees from the perspective of agency theory and concluded that agency costs were the significant factors in their creation. They argue that audit committees reduce agency costs by

'enhancing the quality of information flows between the principal and the agent'. Following agency theory, as an important governance mechanism, the audit committee have non-executive directors' representation and these non-executive directors should have no personal relationship with management. The inclusion of non-executive directors is important as they provide an unbiased assessment that is "stockholder-oriented" and that establishes a best practice of "checks and balance" on management's actions (Vance, 1983, p 46). In addition, Donaldson (1990, p376) suggests that it is also important for the chairperson of the board to be independent and for the chief executive officer and executive directors to have their personal interests aligned with shareholders through stock ownership. Jensen and Meckling (1976) also argue that management and owner interests can be better aligned by increasing management share ownership, however this can lead to the adverse effect of management entrenchment (Lane *et al*, 1998; Shleifer and Vishny, 1989), whereby management share ownership is so substantial that they wield significant power to influence the composition of the board of directors. Consequently, this can facilitate management shirking and excessive consumption of perks.

Moreover, it has been suggested in the empirical literature that in addition to having non-executive directors, the size, specific knowledge, experience and a greater frequency of meetings of both the board and audit committee help enhance the corporate governance of firms (Chen and Zhou, 2007; Monks and Minow, 2008; Dezoort, 1998; Carcello *et al.,* 2002; Abbott *et al.,* 2003a, Krishnan and Lee, 2009; Menon and Williams, 1994; Vafeas, 1999; Abbott *et al.,* 2004). This committee helps provide assurance on the quality of financial reporting produced by management. Consequently, in this thesis, the governance role of the audit committee is studied as a mechanism that mitigates agency conflicts in influencing financial reporting quality. These issues have been outlined in chapter 2 and are discussed in depth in the hypothesis development of chapter 3.

Agency theory provides the main theoretical underpinnings for this study and determines to a great extent the approach used in the study. It also influences the formulation of the study hypotheses as popular agency cost variables relevant to the

study are examined. Consequently, this 'agency' view of the relationship between management and owners has implications for the methodological approach adopted by researchers. This has a subsequent impact on the sector chosen for research and the analytical techniques applied to investigate issues of corporate governance (Brennan and Solomon, 2008). Research into corporate governance has traditionally been grounded in an objective ontology and positivist epistemology, hence the dominant use of quantitative methods. Watts and Zimmerman (1986) are staunch supporters of agency theory and positivism and have argued for accounting research to retain its traditional quantitative focus and for it to remain 'true' to its origins. Dollery *et al.,* (1996, p157) also argue that positivism promotes the credibility of accounting research, stating "*research in accounting must at the very least be highly quantitative, or it simply is not viewed as scholarly by the key players in academia*". Thus, this research employs a positivist approach using the agency theory perspective when exploring the research questions set.

3.2 Main Research Questions

The purpose of this research study is to examine the impact of audit committee characteristics on financial reporting quality in a large sample of UK listed companies. Considering the purpose of this study and the literature review findings, this study investigates the following research questions;

Do audit committee characteristics (including: size, independence, expertise, meetings, busyness, share ownership and tenure) influence the quality of external audit in UK companies?

Do audit committee characteristics (including: size, independence, expertise, meetings, busyness, share ownership and tenure) influence the quality of earnings in UK companies?

3.3 Hypothesis Development

The following section discusses the development of each of the hypotheses to be investigated in the study.

3.3.1 Audit Committee Size and Financial Reporting Quality

The size of the audit committee is an important factor in enhancing financial reporting quality as larger audit committees are likely to have the advantage of relying on a wider knowledge base and varied expertise and thereby undertake their role more effectively (Vafeas, 2000). The evidence provided by empirical studies is rather interesting on the association between audit committee size and financial reporting quality. Prior studies (such as Abbott *et al.*, 2003a; Vafeas and Waegelein, 2007; Hoitash and Hoitash, 2009; Zaman *et al.*, 2011) found a positive association between the audit committee size and audit fee. Hoitash and Hoitash (2009) have also found that audit committee size is negatively associated with non-audit fee ratio highlighting the importance of audit committee size in maintaining auditor independence. Similarly, Lin *et al.* (2006, p930) note that 'larger audit committees seem to improve earnings quality by reducing the probability of restating financial statements and hence provide more oversight over the financial reporting process'. Moreover, Yang and Krishnan (2005) and Kent *et al.* (2010) found a negative association between audit committee size and earnings management. Some studies (such as O'Sullivan, 1999; Abbott *et al.,* 2004; Baxter and Cotter, 2009) show no significant association between audit committee size and financial reporting measures. However, none of the above studies have examined the optimal size of audit committees for overseeing the financial reporting process. The studies that suggest an appropriate audit committee size in relation to other financial reporting outcomes find inconclusive and conflicting results. For example, some studies have shown larger audit committees are more likely to withstand pressures of management collusion (Dezoort and Salterio, 2001) and being able to pay more attention to the overall financial accounting process (Anderson *et al.*, 2004), other studies conceive larger audit committees as increasing the risk of material misstatement (Boo and Sharma, 2008).

Regulatory bodies also deem audit committee size as an integral attribute in controlling the accounting process. The Blue Ribbon Committee (1999) in the US, ASX Corporate Governance Council (2003) in Australia and Combined Code (2008) in the UK put great emphasis on the size of audit committees, and all recommend at least three members within audit committees. The suggestions of a minimum number of

members on the audit committee, without an upper limit, suggests the bodies place great emphasis in ensuring the audit committees are sufficiently staffed. However the lack of clear guidance on a preferable size gives rise to uncertainty as to what size audit committee better serve the interests of shareholders in enhancing the overall financial reporting process. For this reason, the following hypotheses are proposed:

H1: The number of audit committee members is positively associated with audit quality.

H2: The number of audit committee members is positively associated with earnings quality.

3.3.2 Audit Committee Expertise and Financial Reporting Quality

Experience and expertise of audit committee members is an important aspect of audit committee effectiveness in overseeing the financial reporting process. Vafeas and Waegelein (2007) argue that governance expertise are important in maintaining audit quality and documented a positive and significant association between governance expertise and audit fee. They define audit committee governance expertise as the audit committee members' experience of serving on another audit committee. It has also been argued that audit committee members with financial expertise are more likely to be able to deal with complexities of financial reporting than members without such expertise (Dezoort and Salterio, 2001; Davidson *et al.*, 2004) and demand better monitoring of the financial reporting process (Engel *et al.,* 2010).

Due to the complex nature of financial reporting, governance regulators have also shown a considerable interest in the financial expertise of audit committee members. In the United States, the Sarbanes-Oxley Act (2002) mandates audit committees to include at least one financial expert and requires the rest of the members to be financially literate. In the United Kingdom, the Combined Code (2008) recommends that 'at least one member of the audit committee should have significant, recent and relevant financial experience', for example as an auditor or a finance director of a listed company. It is highly desirable for this member to have a professional qualification from one of the professional accountancy bodies, however the right mix of skills and qualifications is even more important (Smith Report 2003, p9). The Sarbanes-Oxley Act avoids a requirement for a qualification but demands an extensive

list of accounting knowledge and skills. The Smith Report has found this to be unduly prescriptive as they believe individual businesses will have different requirements. Complex businesses will find members with an accounting qualification to be essential, however smaller businesses may not require this. Therefore, the Smith report suggests that it would be wrong for the guidance to also require it, rather adding this as a highly desirable recommendation.

As there is no agreed definition of 'financial expertise' so far, empirical research suggests a variety of measures to operationalise financial expertise. Farber (2005), using SEC's broad definition of financial expertise, reported that fraudulent firms have fewer financial experts on their audit committees. Similarly Xie *et al.* (2003), Abbott *et al.* 2003a; Abbott *et al.* (2004), Bedard *et al.* (2004) and Lo *et al.* (2010) note that the presence of financial expertise on the audit committee has a significant positive association with financial reporting quality measures. Yet, Carcello and Neal (2003) and Zaman *et al.* (2011) did not report any benefit of such expertise. Other than examining the mere presence of financial expertise on the audit committee regardless of the nature of expertise, the literature examining the association of different dimensions of financial expertise with financial reporting quality has often used the definition provided by the SEC. According to the definition an audit committee member is deemed a financial expert if the member has: (*a) accounting expertise*, from work experience as a certified public accountant, auditor, chief financial officer, financial controller, or accounting officer; *(b) finance expertise*, from work experience as an investment banker, financial analyst, or any other financial management role; or (*c) supervisory expertise*, from supervising the preparation of financial statements (e.g., chief executive officer or company president).

DeFond *et al.* (2005) note that the market views the appointment of accounting financial experts (SEC definition) in a positive manner. Krishnan (2005) and Dhaliwal *et al.* (2010) show that accounting financial expertise are associated with less earnings management. Similarly, Krishnan and Visvanathan (2008) provide evidence of a strong positive association between accounting financial expertise and earnings quality. Baxter and Cotter (2009) document a significant negative association between the

audit committee accounting expertise variable (members with accounting qualification) and earnings management, hence improving financial reporting quality and also providing support for the Smith Report (2003) recommendations for the audit committee financial expert having a professional accounting qualification. Bedard and Gendron (2010, p177) state that "having the 'right people' as audit committee members is an important input to audit committee effectiveness". Empirical research or regulatory initiatives has paid little or no attention to the general or domain specific expertise of audit committee members and the subsequent impact of this type of expertise on financial reporting quality. This study, in order to answer the controversial question of 'what constitutes an audit committee expert', seeks to examine the efficacy of the monitoring role of such different type of expertise.

From the above discussion, the following hypotheses are proposed;

H3: The proportion of audit committee members with financial expertise is positively associated with audit quality;

H4: The proportion of audit committee members with financial expertise is positively associated with earnings quality;

3.3.3 Audit Committee Independence and Financial Reporting Quality

The independence[14] of the audit committee is another key characteristic for effective monitoring of the financial reporting process (Krishnan, 2005; Koh *et al.*, 2007). It is assumed that independent directors within the audit committee are better at monitoring than their insider counterparts (DeFond and Francis, 2006) and are more likely to report questionable managerial financial reporting practices to appropriate

[14] The Higgs Report was consulted in defining independent non-executive directors. According to the Higgs Report (2003) "Review of the role and effectiveness of non-executive directors", "A non-executive director is considered independent when the board determines that the director is independent in character and judgement, and there are no relationships or circumstances which could affect, or appear to affect, the director's judgement. Such relationships or circumstances would include where the director: is a former employee of the company or group until five years after employment, or any other material connection, has ended; has, or has had within the last three years, a material business relationship with the company either directly, or as a partner, shareholder, director or senior employee of a body that has such a relationship with the company; has received or receives additional remuneration from the company apart from a director's fee, participates in the company's share option or a performance-related pay scheme, or is a member of the company's pension scheme; has close family ties with any of the company's advisers, directors or senior employees; holds cross-directorships or has significant links with other directors through involvement in other companies or bodies; represents a significant shareholder; or has served on the board for more than nine years.
The board should identify in its annual report the non-executive directors it determines to be independent. The board should state its reasons if a director is considered independent notwithstanding the existence of relationships or circumstances which may appear relevant to its determination." (p.81).

authorities (Baxter and Cotter, 2009). The independence of the audit committee is also a subject of increasing regulatory interest. One common focus of their efforts has been to increase audit committee independence. The Combined Code (2008) recommends and the SOX Act (2002) requires all listed companies to establish and maintain a fully independent audit committee.

The available empirical evidence (Klein, 2002a; Carcello and Neal, 2000, 2003; Zain *et al.*, 2006; Martinez and Fuentes, 2007; Vafeas and Waegelein, 2007; Mangena and Tauringana, 2008; Zaman *et al.* 2011) document the benefits associated with higher levels of audit committee independence. However, Baber *et al.* (2005); Osma and Noguer (2007); Baxter and Cotter (2009) have failed to find any significant association between audit committee independence and financial reporting quality measures. Abbott *et al.* (2003a), Carcello *et al.*, (2002) and Mitra *et al.,* (2007) found that independent audit committees are positively associated with the audit fee. Zaman *et al.* (2011), while examining UK evidence, note a negative association between audit committee independence and non-audit fees. Abbott *et al.* (2003b), in an analysis of 538 US firms, note that audit committees which are fully independent are associated with lower non-audit fee ratio. Similarly Koh *et al.* (2007) and Kent *et al.* (2010) noticed that higher audit committee independence is associated with higher accruals quality and hence improved financial reporting quality. An important point to note here is that prior research, with a few exceptions (e.g. Bedard *et al.*, 2004; Bronson, 2009; Lin and Hwang, 2010), has not provided a clear guidance on how much audit committee independence is enough. Bronson (2009) reported that benefits of audit committee independence are consistently achieved only when the audit committee is completely independent, providing support for the Combined Code (2008) and SOX (2002) requirements.

In light of the above discussion, the following hypotheses are proposed;

H5: The proportion of independent audit committee members are positively associated with audit quality;

H6: The proportion of independent audit committee members are positively associated with earnings quality.

3.3.4 Audit Committee Meetings and Financial Reporting Quality

The activity level of audit committees plays an important role in overseeing and monitoring the financial reporting process. It is argued that the frequency of audit committee meetings is a key determinant of its effectiveness (Song and Windram, 2004) and plays a crucial role in addressing important agency problems associated with managerial power vesting through greater ownership (Sharma et al, 2009). The Smith report (2003) argues that audit committee meetings are at the heart of its work and the committee must have as many meetings as the audit committee's role and responsibilities require. It further recommends a minimum number of three meetings per annum.

The findings of prior research (Abbott *et al.,* 2003b; Vafeas, 2005; Goodwin and Kent, 2006: Stewart and Munro, 2007; Krishnan and Visvanathan, 2007; Hoitash *et al.*, 2009; Hoitash and Hoitash, 2009; Engel *et al.,* 2010; Kent *et al.,* 2010; Zaman *et al.* 2011) lend support to the importance currently attached to audit committee activity levels and highlight the benefits associated with higher levels of audit committee diligence. These studies have found support of higher audit committee meetings frequency in relation to audit fee, non-audit fee ratio and earnings quality. However, empirical studies such as Abbott *et al*., (2003a), Bedard *et al.* (2004) and Baxter and Cotter (2009) found no significant association between the frequency of meetings and financial reporting quality measures. The results of a recent meta-analysis study of Lin and Hwang (2010) also support the above findings by documenting a significant negative relationship between the number of audit committee meetings and earnings management.

Therefore this study hypothesises the relationship to be as follows;

H7: The frequency of audit committee meetings is positively associated with audit quality;

H8: The frequency of audit committee meetings is positively associated with earnings quality.

3.3.5 Audit Committee Tenure and Financial Reporting Quality

The tenure of audit committee directors on the board is another important factor in determining the effectiveness of audit committees in performing their monitoring role.

The tenure refers to the length of time the audit committee member has served on the board. There are several views on the impact of tenure length of audit committee members on their ability to fulfil their duties competently and effectively. A view taken in earlier empirical studies (Pfeffer, 1983; Kosnik, 1990) was that longer board service allows directors to gain more firm specific knowledge and better equip themselves to deal with complicated committee proceedings, hence resulting in improved performance in protecting shareholder's interests. Beasley (1996) found strong support for the above argument and report that average tenure of outside directors has a significant negative association with the instances of fraud. In contrast, Vafeas (2003) argues that longer board service might compromise audit committee directors' independence by bringing directors and management closer resulting in directors 'befriending' management. Vafeas (2005) documents a positive association between the mean tenure of audit committee members and poor earning quality measure, showing an inverse relationship between the average tenure and earnings quality. Chan et al., (2012) have also documented a negative association between the proportion of audit committee members serving longer on the board and audit fees.

Similarly, governance regulators in the UK do not support the excessive lengthy tenure of audit committee directors, the Combined Code (2008, p12) states that:

> "any length of service beyond six years for a Non-Executive Director should be subject to particularly rigorous review and should take into account the need for progressive refreshing of the Board. Non-executive directors may serve longer than nine years (e.g. three three-year terms), subject to annual re-election. Serving more than nine years could be relevant to the determination of a non-executive director's independence".

This is much more important and could be of greater concern for those non-executive directors who serve on the audit committee. In light of the above discussion, this study proposes the following hypotheses;

H9: The proportion of audit committee members with longer tenure (over 9 years) is negatively associated with audit quality;

H10: The proportion of audit committee members with longer tenure (over 9 years) is negatively associated with earnings quality.

3.3.6 Audit Committee Share Ownership and Financial Reporting Quality

The potential effects of audit committee members' share ownership on the monitoring of the financial reporting process have been the subject of many studies. The empirical evidence suggests there is a potential association between share ownership and the effectiveness of the financial reporting process. On one hand, it has been argued that independence of audit committee members with high shareholdings can be questioned as they may seek greater levels of influence in the operations of the firm in order to protect their investments (Forker, 1992; Lavelle, 2002). Carcello and Neal (2003) found that in firms where audit committee members' share ownership was high, audit committee members were more likely to dismiss an external auditor after issuing a going concern report to protect their vested interest.

Alternatively, it has been argued that share ownership can result in greater vigilance by audit committee members, as they have more of a stake in ensuring the company performs well (Jensen, 1989; Shivdasani, 1993). Thus, a high shareholding by audit committee members (as NEDs) can actually help improve the financial reporting process by motivating them to monitor more effectively. From the agency theory perspective, this argument holds more sway because agents will always seek to further their own objectives. Therefore by increasing their stake in the organisation, they will have more incentive to ensure the firm is performing. Directors with greater shareholding will have more incentive to monitor and challenge management reporting (Jensen, 1993). Jensen (1993) argues this incentive is usually greater for corporate directors compared to short-term investors as they are likely to have a long-term orientation. In-fact, Beasley (1996) found that the likelihood of fraud decreases as stock ownership by outside directors (not necessarily audit committee directors) on the board increases. Subsequently, both Vafeas (2005) and Martinez and Fuentes (2007) found a positive association between the equity held by the audit committee member and financial reporting quality.

From the above discussion, this study hypothesises the relationship to be as follows;

H11: The proportion of equity held by audit committee members is positively associated with audit quality.

H12: The proportion of equity held by audit committee members is positively associated with earnings quality.

3.3.7 Audit Committee Busyness and Financial Reporting Quality

The issue of holding multiple directorships not only remains a major concern for governance regulators but also remains a focus of research attention, stretching from the empirical evidence on the determinants of multiple directorships (O'Sullivan, 2005; O'Sullivan, 2009) to the impact of such directors on various financial matters (Fich and Shivdasani, 2006). A common view among policy advocates is that serving on numerous boards can result in overstretched directors that may not be effective monitors on any board. In the UK, the Combined Code (2003) recommends that 'executives should be discouraged from holding more than one non-executive directorship in another listed company'. Similarly in the US, the National Association of Corporate Directors (1994) guidelines recommend that 'senior corporate executives and CEOs should hold no more than three outside directorships'. In spite of this, the holding of multiple directorships by the non-executive board members is still untouched by the regulatory authorities around the world.

Fama and Jenson (1983) maintain that additional directorships are positively correlated with the reputation of directors as monitoring expert, thus showing that busy directors may be more capable directors than their counterparts. A number of studies document the benefits associated with holding additional directorships (Shivdasani, 1993; Ferris *et al.,* 2003; Carcello *et al.,* 2002b; Bedard *et al.,* 2004; Yang and Krishnan, 2005). However, several studies argue that board monitoring requires substantial time and effort and do not support the beneficial impact of additional directorships on firm performance (Booth & Deli, 1996; Beasley, 1996). Core *et al.* (1999) found a strong correlation between directors with other appointments and excess CEO compensation; showing that such directors may not be very good monitors of their management. Moreover, Shivdasani and Yermack (1999) note that multiple directorships may have a negative impact on the effectiveness of outside directors as corporate monitors. Recent empirical research also reports a strong negative relationship between the presence of directors holding multiple directorships and firm

performance (Miwa and Ramseyer, 2000; Maloney, 1999; Fich and Shivdasani, 2006). Specifically, while examining the impact of additional directorships on earnings management, Dhaliwal *et al.* (2010) document that audit committee members (accounting experts) with fewer directorships are associated with less earnings management. In view of the above argument I think that higher number of directorships will be associated with adverse financial reporting quality related outcomes. Therefore for the purpose of this research, this study proposes the following hypothesis;

H13: The busyness of the audit committee members is negatively associated with audit quality;

H14: The busyness of the audit committee members is negatively associated with earnings quality;

3.3.8 Audit Committee Effectiveness and Financial Reporting Quality

The word 'effective' is defined by The Oxford Dictionary as: 'the degree to which something is successful in producing a desired result'. Audit committee effectiveness remains the focus of attention for all those stakeholders interested in the maintenance of the integrity of the financial reporting process. The individual role of the audit committee characteristic in this regard is of fundamental importance. However, Zaman *et al.* (2011) argue that interaction and joint effect of these characteristics also plays an important role in enhancing audit quality. In their study linking corporate governance characteristics and audit and non-audit fees, Zaman *et al.* (2011) document a positive significant association between the audit committee effectiveness measure and audit fee and non-audit fee. These findings clearly suggest that effective audit committees are associated with better quality audit. As there is no agreed measure of the term 'effectiveness', the challenge of coding audit committee effectiveness remains far from over.

Prior literature measured the effectiveness of audit committees in terms of its independence from management (Ng and Tan, 2003), duration of meetings (Collier and Gregory, 1999) and by examining the performance of audit committee members during audit committee meetings (Gendron and Bedard, 2004). More recently, Abbott

et al., (2007) measured audit committee effectiveness by using a composite variable which includes independent directors, minimum four meetings and at least one financial expert. Similarly, Zaman *et al.* (2011) also quantified audit committee effectiveness by using a composite measure that includes *independence* of audit committee members, *financial expertise* of audit committee members, the *diligence* (frequency of meetings) of the audit committee, and *size* of the audit committee. This study uses an enhanced construct of audit committee effectiveness initially developed by Zaman *et al.* (2011) and in the light of above discussion proposes the following hypotheses;

H17: The presence of an effective audit committee is positively associated with audit quality;

H18: The presence of an effective audit committee is positively associated with earnings quality.

3.4 Sample Selection

The past decade witnessed a significant change in the governance characteristics of UK listed companies. This study covers the period of 2007 to 2010, following the recommendations laid down by the Audit Committees Combined Code Guidance (2003): A report and proposed guidance by an FRC appointed group chaired by Sir Robert Smith. The committee chaired by Sir Robert Smith reported on five main areas of the Audit Committee. These are (1) Purpose, (2) Membership, procedure and resources, (3) Relationship with the board, (4) Roles and responsibilities and (5) Communications with shareholders. The report states that while 'all directors have duty to act in the interest of the company, the audit committee has a particular role, acting independently from the executive, to ensure that the interest of shareholders are properly protected in relation to financial reporting and internal control' (Smith Committee, 2003: p 3). In light of the above statement, the time period covered in this study (2007-2010) allows us to examine the influence of refined rules regarding audit committee characteristics in relation to measures chosen to investigate the quality of financial reporting.

The population for the study consists of FTSE 350 firms listed on the London Stock Exchange. As the period of selection for this study was 2007 – 2010, this study includes only those companies that existed throughout this period. The LSE database automatically generates a list of only those companies which are still in operation, discarding all those companies which are either dead, merged or not in operation for any other reason. The starting point for this analysis was the identification of companies who were in the FTSE-350 for the duration of the study period, between 2007 and 2010. This is important since current governance recommendations in the UK make a distinction between FTSE-350 firms and other listed firms whereby the latter have a less onerous set of governance recommendations. Of relevance to this study, for example, is that non-FTSE-350 firms are required to possess a minimum of two audit committee members as opposed to three for FTSE-350 firms.

In common with most studies in this area this study excludes all financial firms, principally insurance companies and banks, as they have different regulatory environments as well as different reporting conventions to other companies. The decision to use the largest 350 firms was made because these firms represent a large share of aggregate market capitalization and therefore receive great interest among regulators and investors. It also provides a manageable sample in terms of the amount of data that needs to be collected and analysed. The focus on these larger firms is also likely to be more effective in allowing us to check the impact of corporate governance characteristics on financial reporting quality. The process of sample selection and distribution of firms by years and industry is summarised in tables below. The firms from the financial sector and those with missing audit committee and financial data were dropped from the final sample. Similarly a small number of observations with the extreme audit fee values were also dropped from the sample. The final sample for the audit committee and audit fee analysis equals 991 firm observations[15]. However a number of firms do not purchase any non-audit services and hence these firms are not included in the final sample of audit committee and non-audit fee ratio analysis. Therefore final sample for the non-audit fee ratio analysis equals 948 firm observations.

[15] The outliers in relation to audit fee data were identified using SPSS box plots and extreme values were removed from the sample.

Table 3.1 Sample selection process - Audit quality

Description	2007	2008	2009	2010	Total
FTSE350	350	350	350	350	1400
Financial firms	70	70	70	70	280
Missing AC and DataStream information	13	13	12	12	50
FTSE dropout	0	8	13	15	60
Outliers	6	4	4	5	19
Final sample size for the audit fee analysis	246	248	249	248	991
Firms that pay zero non-audit fee	9	13	11	10	43
Final sample size for the non-audit fee ratio analysis	237	235	238	238	948

Table 3.2 Industry distribution – Audit quality

Industry Name	N	Percentage
Consumer Goods	218 (208)	21.99 (21.94)
Industrials	296 (284)	29.86 (29.96)
Mineral extraction	79 (74)	7.97 (7.80)
Services	342 (331)	34.51 (34.92)
Utilities	56 (54)	5.65 (5.70)
Final Sample Size	991 (948)	100 (100)

This study also looks at the association between the audit committee characteristics and earnings quality and this forms the second empirical aspect of this thesis. The sample choice for the second empirical of this study - earnings quality - is slightly different from the first empirical investigation of audit quality issues. In line with the prior literature in this area (Peasnell *et al.* 2005; Ghosh, 2010), to provide an unbiased measure of accrual quality this study excludes industries with less than 10 observations in any given year. The industries that were excluded from the study sample are; aerospace and defence, chemicals, forestry, general industrials, personal goods, pharmaceutical and bio-technology, technology hardware and equipment, tobacco and utilities. A number of outliers in relation to accruals quality measure were identified using box plots and dropped from the sample. This reduced the pooled sample size

from 1400 observations to 691[16]. The sample selection procedure is given in the tables below.

Table 3.3 – Sample selection process - Earnings quality

Description	2007	2008	2009	2010	Total
FTSE350	350	350	350	350	1400
Financial and regulated firms	70	70	70	70	280
Missing AC and DataStream information	32	32	30	30	124
Industries smaller than 10	55	55	55	55	220
FTSE dropout	0	3	5	8	32
Outliers	13	12	14	14	45
Final Sample Size	171	173	174	173	691

Table 3.4 - Industry distribution-Earnings quality

Industry Name	N	Percentage
Electronic and Electrical Equipment	40	5.78
Food and Beverages producers	62	8.97
General Retailer	100	14.47
Household Goods	40	5.78
Industrial Engineering	40	5.78
Media	40	5.78
Mining	43	6.22
Oil and Gas Producers	36	5.21
Software and Computer Services	51	7.38
Support Services	139	20.12
Travel and Leisure	100	14.47
Final Sample Size	691	100

3.5 Data Sources

The main sources of information for the study are companies' published annual report and accounts for the years 2007 to 2010. These annual reports are either obtained directly from the companies' websites or accessed using *FAME* database. The audit

[16] The outliers were identified using SPSS box plots and extreme values were removed from the sample.

committee variables and other board variables data are collected by hand. This study also uses the *Hemmington Scott Guru* and LSE databases to collect and cross check variables such as expertise and busyness of audit committee members and director's share ownership etc. For the purpose of this study a substantial amount of time and effort is invested to identify, extract and cross check audit committee variables. For example, the information on the audit committee size, independence and meetings was collected by hand using the corporate governance section of annual reports of each company. The biographical data disclosed in the annual reports for members of the audit committee was perused to identify those serving on other audit committees and with financial expertise i.e. accounting and non-accounting expertise or members with professional accounting qualifications. This information was then cross checked with *Hemmington Scott Guru* database to make sure that all the information was complete and up to date. The information on the tenure of audit committee members was collected by looking at the biographical details i.e. the appointment date of the audit committee members disclosed in the annual reports of each company. The information on additional directorships of audit committee members is gathered from annual reports by making a note of directorships held by each audit committee member and then cross checking these directorships with the listings provided by the London Stock Exchange for the UK Main Market and the International Main Market in the year of the publication of the annual report. *DataStream*, *Thomson One Banker* and *FAME* databases are used to collect the various financial statement data items used to calculate the earnings quality variables explained in the next section.

3.6 Measurement of Dependent Variables

3.6.1 Audit Quality

In view of the multi-dimensional nature of the term 'audit quality' and the various definitions provided in the review of the literature to gauge audit quality, this study explores the two key aspects of audit quality, auditor effort and auditor independence, by employing two measures namely audit fee and non-audit fee ratio respectively. In the UK, Cadbury (1992) argued that appropriately structured audit committees have the potential to improve both the quality of companies' financial reporting, as well as ensuring the independence of the statutory external audit. The provision of higher

quality audit adds additional costs to the audit firm and consequently these costs are passed on to the client. The signalling hypothesis provides the linkage between the audit quality and audit fee. Numerous prior studies relate higher audit fee with better audit quality as it compensates for the increased audit effort or audit coverage (Simunic, 1980; Craswell *et al.,* 1995; Collier and Gregory, 1996; O'Sullivan, 2000; Carcello *et al*., 2002b; Abbott *et al*., 2003a; Bedard and Johnstone, 2004; Mitra *et al.,* 2007; Vafeas and Waegelein, 2007; Hoitash and Hoitash, 2009; Bliss, 2011). More recently Krishnan and Visvanathan (2009) while investigating US firms, Zaman et al., (2011) while analysing UK firms and Chan *et al.,* (2012) in an analysis of Australian firms have also utilised audit fee as a surrogate of audit quality. The Company Act (1991) requires all the listed companies to provide the amount of audit fee paid to the external auditor in their financial statements. Consequently, this study extracts the audit fee amount from the company's annual financial statements and utilises it as the first proxy to measure audit quality.

The dual provision of non-audit services has continuously been controversial due to their potential impact on auditor independence (Beattie and Fearnley, 2002; Frankel *et al.,* 2002; Larcker and Richardson, 2004). An independent audit function is crucial in establishing a reliable overall financial reporting process. The nature and the amount of non-audit service fees have been seen as a major threat to auditor objectivity and independence (Kida, 1980; DeAngelo, 1981; Beattie *et al.,* 1999; Gul *et al.,* 2006; Beaulieu and Reinstein, 2010). Empirical evidence shows that the economic bonding between the auditor and the client hampers the overall financial reporting process (Francis & Ke, 2004; Krishnan *et al.,* 2005; Knechel *et al.,* 2012). Regulators also fear that non-audit service fees, especially when the non-audit fee is higher than the audit fee, create a dependency of the auditors on their clients and this economic bonding results in decreasing financial reporting quality. Arthur Levitt (Levitt, 2000), former chair of the SEC, expressed his concerns on the provision of non-audit services when he stated that 'consulting and other services shorten the distance between the auditor and management' and therefore have a direct negative impact on auditor independence. The Companies Act (1991) also requires companies to state the remuneration paid to the auditor for their non-audit services in the annual financial

statements. Following Abbott *et al.,* (2003b) and Zaman *et al.,* (2011) this study uses the non-audit to audit fee ratio as its second proxy for audit quality.

3.6.2 Earnings Quality

This study will use two accruals based earnings management models to capture the construct of financial reporting quality. The construct of financial reporting quality will be measured by developing two proxy measures for earnings quality from these models. The following section provides a brief description of these models and the way these models will be used in the current study. Schipper (1989, p.368) defines earnings management as 'a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain'. Similarly, Mulford and Comiskey (1996, p360) note that 'earnings management is the active manipulation of accounting results for the purpose of creating an altered impression of business performance'. Likewise Healy and Wahlan (1999, p368) explain earnings management as management using 'judgement in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers'. Although there may be some differences on the exact definition of earnings management, the main essence of the above definitions is that managers tend to report earnings as they wish rather than as the true financial position of a firm. For that reason, reported earnings in the financial statements do not reflect the actual underlying economic substance of the firm.

Accrual accounting provides important and useful information on companies' financial performance however the process itself is based on assumptions such as judgement and accounting discretion. Managers use accruals to estimate earnings, as firstly any subsequent change in the accruals estimation does not require the restatement of financial statements; and secondly, it is difficult for external auditors to label 'judgement' as a wilful act to manipulate earnings. Overseeing the financial reporting process and more specifically maintaining the integrity of the financial statements is the fundamental responsibility of the audit committee. Consequently, an effective audit committee should deter management from making intentional errors and also

motivate management to exercise greater care in reducing unintentional errors, resulting in higher accruals quality (Dhaliwal *et al.,* 2010).

Accruals quality can be damaged by both intentional and unintentional errors. Consistent with prior research in earnings management (e.g. Francis *et al.* 2005; Dhaliwal *et al.* 2010), this study measures earnings quality by employing the model proposed by McNichols (2002), which is a modification of the original Dechow and Dichev (DD) 2002 model. To capture accruals quality, some prior studies have also used the Jones model (1991) or its variants. However, a criticism of the Jones model (1991) is that it measures accruals quality in an indirect manner (Schipper and Vincent, 2003; Francis *et al.*, 2005). This problem can be overcome by using a direct approach to measure earnings quality. Aboody *et al.* (2005, p. 365) note that the DD measure 'is a relatively more direct measure of a company's information environment derived from fundamental accounting data contained in its financial statements'. McNichols (2002) use industry level pooled cross-sectional regressions with the total current accruals as the dependent variable and the cash flows in previous, current, and subsequent years as well as the changes in revenue and PPE as independent variables. McNichols (2002) shows that by adding changes in revenue and PPE to the cross-sectional DD regression significantly increases its explanatory power, thus reducing measurement error. Specifically, the proxy for accruals quality is measured by estimating the following regression by industry and year;

$$\Delta WC_t = b0 + b1CFO_{t-1} + b2CFO_t + b3CFOt_{+1} + b4\Delta Rev_t + b5PPE_t + \varepsilon_t \quad (1)$$

[Where Δ in working capital in year t (ΔWC*t*) = (ΔCurrent Assets – ΔCurrent Liabilities) – ΔCash; CFO*t*-1 represents 'Cash flows from operations in year *t* – 1'; CFO*t* represents 'Cash flows from operations in year *t*' and CFO*t*+1 represents 'Cash flows from operations year in year *t* + 1'; ΔRev*t* represents 'Sales in year *t* – Sales in year *t* – 1' and PPE*t* represents 'Gross property, plant and equipment in year *t*'. All variables shown above are scaled by total assets.]

Operationally, this model measures accrual quality for each firm by using the absolute value of the residual as the measure of accrual quality (Srindhi and Gul, 2007; Baxter and Cotter, 2009). The high value of absolute residual for each sample company signifies the low quality of earnings. The second measure of earnings management is the discretionary component of accruals and this study uses the Francis *et al.,* (2005)

model to capture the discretionary component of accruals. Francis *et al.,* (2005) separates McNichols (2002) measure of earnings management into its discretionary and non-discretionary elements. Francis *et al.,* (2005) compute the components of accruals (i.e. both discretionary and non-discretionary) by estimating a regression of firms' innate factors affecting accruals quality. To determine the discretionary components of accruals quality, the regression equation will be as follows;

$$AQ = \alpha + b1SIZE + b2\ LOSS + b3OPCYC + b4\sigma CFO + b5\sigma REV + \varepsilon_t \quad (2)$$

[where AQ is the accruals quality (absolute value of accruals quality from equation 1); SIZE is the natural log of total assets, ; LOSS is the number of years in which a loss was recorded for last three years; OPCYC is the natural log of average age of inventory plus the average age of receivables (in days), σCFO is the standard deviation of cash flow from operation over last five years (scaled by total assets) and σREV is the standard deviation of operating revenue over the last five years (scaled by total assets).]

Earnings management can be used to both increase or decrease earnings but this research is not concerned with whether earnings are being negatively or positively manipulated. Any manipulation in earnings has an adverse affect on the financial reporting quality, hence only the absolute value calculated will be used. The residual from (2) is the estimate of the discretionary component of firm's accrual quality. The higher the absolute residual for each sample company, the lower is the quality of earnings.

3.7 Measurement of Independent Variables

This study uses a number of variables to proxy for audit committee characteristics. It is possible since current governance disclosures in the UK make explicit recommendations in relation to specific audit committee characteristics (i.e. size, independence, meeting frequency and expertise) and also require details of compliance with these recommendations to be disclosed in the annual report (Combined Code, 2003; 2006; 2008 and UK Corporate Governance Code, 2010). Consequently, this study utilises these disclosures to construct the key independent variables necessary for this investigation. The main independent variables of interest and their measurement constructs are as follows.

3.7.1 Audit Committee Size

Audit committee size is a continuous variable and is measured in absolute terms as well as dummy variable indicating instances where the audit committee contains three or more members. This study further develops an alternative measure of audit committee size representing those audit committees that have above median size. The information on the audit committee size was collected by hand using corporate governance section of annual reports of each company.

3.7.2 Audit Committee Expertise

The essence of audit committee expertise is captured using the governance expertise i.e. audit committee members' service on other audit committees and four different measures of financial expertise of its members. Audit committee governance expertise is a continuous variable and measured as a percentage of audit committee members serving on the other audit committees. Audit committee's financial expertise is again a continuous variable, measured as the proportion of audit committee members with overall financial expertise as well as dummy variable indicating instances where the audit committees fulfil the requirement of having a financial expert. The notion of overall financial expertise is measured using the current SEC definition of financial expertise which includes members with work experience as a certified public accountant, auditor, chief financial officer, financial comptroller or accounting officer. This also includes members with work experience such as an investment banker, financial analyst, or any other financial management role and/or a chief executive officer, chairman or company president. This suggests that the term financial expertise could entail the accounting and finance expertise, as well as any expertise in the preparation of financial statements.

Audit committee accounting expertise is again a continuous variable measured as the proportion of audit committee members with accounting expertise. The notion of accounting expertise is measured by using a strict definition proposed by the SEC and later used by Krishnan and Visvanathan (2008), Krishnan and Lee (2009) and Dhaliwal *et al.,* (2010). The SEC defines the accounting expert as 'a member with experience as a certified public accountant (CPA), auditor, chief financial officer (CFO), chief financial

controller or chief accounting officer'. Audit committee non accounting expertise is also a continuous variable measured as the proportion of audit committee members with non-accounting expertise i.e. finance and supervisory expertise. These members include people with work experience as an investment banker, financial analyst, or members with experience of supervising the preparation of financial statements (e.g. chief executive officer or company president). The biographical data disclosed in the annual reports for members of the audit committee was perused to identify those serving on other audit committees and with financial expertise i.e. accounting and non-accounting expertise. This information was then cross checked with *Hemmington Scott Guru* database to make sure that all the information was complete and up to date.

3.7.3 Audit Committee Independence

Audit committee independence is a continuous variable, measured as the proportion of audit committee members declared as independent by the board. Audit committee independence is also measured using a dichotomous variable; value of 1 is used if the audit committee is composed of all independent non-executive directors and 0 otherwise. The Higgs Report was consulted in defining independent non-executive directors. According to the Higgs Report (2003, p81), 'A non-executive director is considered independent when the board determines that the director is independent in character and judgement, and there are no relationships or circumstances which could affect, or appear to affect, the director's judgement'.

3.7.4 Audit Committee Meetings

Audit committee meetings is also a continuous variable, measured as the number of audit committee meetings held for the whole year as well as dummy variables indicating instances where the audit committee members hold 3 or more meetings. Another binary variable has also been used to represent audit committee meetings above the median value of audit committee meetings. The information on audit committee meetings was handpicked and collected using the corporate governance section of the annual report of each company.

3.7.5 Audit Committee Tenure

Audit committee tenure is quantified using two continuous variables. Audit committee tenure is measured using the proportion of audit committee members with over 9 years tenure on the board as well as a variable representing the proportion of audit committee members with over 6 years tenure on the board. The information on the tenure of audit committee members was collected by looking at the biographical details i.e. the appointment date of the audit committee members disclosed in the annual reports of each company.

3.7.6 Audit Committee Share Ownership

Audit committee share ownership is again a continuous variable measured as the proportion of equity held by the audit committee members. This information was collected by consulting the remuneration and directors report section of the annual report of each company.

3.7.7 Audit Committee Busyness

The busyness of the audit committee as a whole and its individual members is captured using a variety of variables. The first variable capturing audit committee busyness is a continuous variable measured as the average directorships held by the audit committee members[17]. Audit committees are also categorised as being busy (proportion of members with at least one other directorship), more busy (proportion of members with at least two other directorship) and too busy (proportion of members with at least 3 other directorship). These categories measured using continuous variables, measured as the proportion of audit committee members with at least one or more, two or more and three or more directorships. This information was gathered from annual reports by making a note of directorships held by each audit committee member and then cross checking these directorships with the listings provided by the London Stock Exchange for the UK Main Market and the International Main Market in the year of the publication of the annual report.

[17] This study only includes directorships of companies listed on the *London International Stock Exchange* (excluding directorships in AIM).

3.7.8 Audit Committee Effectiveness

Audit committee effectiveness constructs are composite measures consisting of audit committee size, audit committee independence, audit committee financial expertise, audit committee meetings frequency. First, a dummy variable representing those firms whose audit committees satisfy all four of the recommended characteristics i.e. size, meetings, independence and expertise (ACE1) and then this dummy variable is extended to include both the presence of an accounting expert and the absence of members with excess of nine years' tenure (ACE2). The third (ACE3) and fourth (ACE4) measures of audit committee effectiveness include variables representing the accumulated score for each of these four and six variables used in ACE1 and ACE2 respectively.

3.8 Empirical Research Models and Tests

This study utilises four different empirical proxies to test the hypotheses set out for this study. The first two proxies, i.e. audit fee and non audit fee ratio, investigate the association between audit committee characteristics and audit quality and the next two proxies, i.e. McNichols (2002) and Francis et al., (2005) measures of earnings quality, investigate the role audit committee characteristics play in constraining the earnings management practices.

3.8.1 Audit Committee Characteristics and Audit Quality Models

This stage of the study utilizes four main empirical models. In model 1 this study uses the dummy variables for each of the four audit committee characteristics currently recommended as best practice for UK listed companies (Combined Code, 2006 and 2008; UK Corporate Governance Code, 2010) while in model 2 these dummy variables are substituted with corresponding variables containing the absolute values for each of these four variables. In models 3 and 4 this study employs variables capturing audit committee effectiveness: in model 3 a dummy variable representing those firms whose audit committees satisfy all four of the recommended characteristics (ACE1) and in model 4 dummy variable is extended to include both the presence of an accounting expert and the absence of members with excess of nine years' tenure (ACE2). The empirical models testing the relationship between the audit committee characteristics

and audit quality using audit fee and non-audit fee ratio as proxies to measure audit quality are as follows.

3.8.1.1 Audit Fee Models

Model 1: LOG(AF) = β0 + β1ACSIZE + β2AC%IND + β3ACMEETINGS + β4AC%FINEXP + β5AC%SHAREOWN + β6ACAVEDIRECTORSHIPS + β7BOARDINDDUMMY + β8BOARDMEETINGS + β9LOGTOTALASSETS + β10LOGSUBS + β11LOGSUBSDUMMY + β12BIG4 + β13LONDON + β14LOGDELAY + β15%DEBTORS + β16%STOCK + β17ROA + β18LOSS + β19%GEARING + β20%BLOCKOWN + β21INDUSTRY + β22TIME + ε.

Model 2: LOG(AF) = β0 + β1ACSIZEDUMMY + β2ACINDDUMMY + β3ACMEETINGSDUMMY + β4AC%FINEXPDUMMY + β5AC%SHAREOWN + β6ACAVEDIRECTORSHIPS + β7BOARDINDDUMMY + β8BOARDMEETINGS + β9LOGTOTALASSETS + β10LOGSUBS + β11LOGSUBSDUMMY + β12BIG4 + β13LONDON + β14LOGDELAY + β15%DEBTORS + β16%STOCK + β17ROA + β18LOSS + β19%GEARING + β20%BLOCKOWN + β21INDUSTRY + β22TIME + ε.

Model 3: LOG(AF) = β0 + β1ACE1 + β2AC%SHAREOWN + β3ACAVEDIRECTORSHIPS + β4BOARDINDDUMMY + β5BOARDMEETINGS + β6LOGTOTALASSETS + β7LOGSUBS + β8LOGSUBSDUMMY + β9BIG4 + β10LONDON + β11LOGDELAY + β12%DEBTORS + β13%STOCK + β14ROA + β15LOSS + β16%GEARING + β17%BLOCKOWN + β18INDUSTRY + β19TIME + ε.

Model 4: LOG(AF) = β0 + β1ACE2 + β2AC%SHAREOWN + β3ACAVEDIRECTORSHIPS + β4BOARDINDDUMMY + β5BOARDMEETINGS + β6LOGTOTALASSETS + β7LOGSUBS + β8LOGSUBSDUMMY + β9BIG4 + β10LONDON + β11LOGDELAY + β12%DEBTORS + β13%STOCK + β14ROA + β15LOSS + β16%GEARING + β17%BLOCKOWN + β18INDUSTRY + β19TIME + ε.

3.8.1.2 Non Audit Fee ratio Models

Model 1: NAF RATIO = β0 + β1ACSIZE + β2AC%IND + β3ACMEETINGS + β4AC%FINEXP + β5AC%SHAREOWN + β6ACAVEDIRECTORSHIPS + β7BOARDINDDUMMY +

β8BOARDMEETINGS +β9BIG4 + β10LONDON + β11LOGSUBS + β12LOGSUBSDUMMY + β13LOGTOTALASSETS + β14ROA + β15LOSS + β16%GEARING + β17%BLOCKOWN + β18INDUSTRY + β19TIME + ε.

Model 2: NAF RATIO = β0 + β1ACSIZEDUMMY + β2ACINDDUMMY + β3ACMEETINGS DUMMY + β4ACFINEXPDUMMY + β5AC%SHAREOWN + β6ACAVEDIRECTORSHIPS + β7BOARDINDDUMMY + β8BOARDMEETINGS +β9BIG4 + β10LONDON + β11LOGSUBS + β12LOGSUBSDUMMY + β13LOGTOTALASSETS + β14ROA + β15LOSS + β16%GEARING + β17%BLOCKOWN + β18INDUSTRY + β19TIME + ε.

Model 3: NAF RATIO = β0 + β1ACE1 + β2AC%SHAREOWN + β3ACAVEDIRECTORSHIPS + β4BOARDINDDUMMY + β5BOARDMEETINGS +β6BIG4 + β7LONDON + β8LOGSUBS + β9LOGSUBSDUMMY + β10LOGTOTALASSETS + β11ROA + β12LOSS + β13%GEARING + β14%BLOCKOWN + β15INDUSTRY + β16TIME + ε.

Model 4: NAF RATIO = β0 + β1ACE2 + β2AC%SHAREOWN + β3ACAVEDIRECTORSHIPS + β4BOARDINDDUMMY + β5BOARDMEETINGS +β6BIG4 + β7LONDON + β8LOGSUBS + β9LOGSUBSDUMMY + β10LOGTOTALASSETS + β11ROA + β12LOSS + β13%GEARING + β14%BLOCKOWN + β15INDUSTRY + β16TIME + ε.

Dependent variable:

1 - LOG(AF) = the natural log of audit fee and 2 - NAF Ratio = non-audit fee/audit fee

Independent variables: Log Total Assets = the natural logarithm of total assets; Log Subs = the natural logarithm of total consolidated subsidiaries; US Subs dummy = dummy variable indicating US subsidiaries; Debtors = percentage of total assets represented by debtors; % Stock = percentage of total assets represented by stock; Log Delay = the natural logarithm of audit delay; ROA = return on assets; % Gearing = percentage of total long-term finance represented by long term debt; Loss = dummy variable representing the firm incurring loss in last two years; London = dummy variable representing firms audited by a London based auditor; Big4 = dummy variable indicating instances where the audit was carried out by a Big4 audit firm; % Block Own = percentage of equity owned by the block holders; % Log Non Audit Fee = the natural logarithm of non audit fee; Board Ind dummy = dummy variable indicating instances where boards comprised of majority independent directors; Board meetings = the number of meetings held by the board during the year; AC % Share own = percentage of equity held by audit

committee members; AC Ave Directorships = average directorships held by the audit committee members; AC Size dummy = dummy variable indicating instances where the audit committee contains three or more members; AC Meetings dummy = dummy variable indicating instances where the audit committee held at least three meetings; AC Ind dummy = dummy variable indicating instances where the audit committee had solely independent non-executive directors; AC Fin Exp dummy = dummy variable indicating instances where the audit committees had financial expertise; AC Size = number of audit committee members; AC Meetings = Number of audit committee meetings held during the year; AC % Ind = Percentage of audit committee members who are independent non-executive directors; AC % Fin Exp = Percentage of audit committee members who are financial experts; ACE1 = dummy variable representing instances where audit committees comprise at least three members, contained at least one financial expert, all members being independent and met at least three times during the financial year; ACE2 = dummy variable representing instances where audit committees comprise at least three members, contained at least one financial expert, all members being independent and met at least three times during the financial year, contains one accounting expert and has no member with more than 9 years tenure; Industry = type of industry; Time = year.

The control variables can be broadly categorized between those used in existing audit pricing studies and those focusing specifically on audit committee characteristics. Therefore, under the first category, this study follows the existing literature in identifying suitable proxies for company size, complexity, risk, auditor characteristics and the provision of non-audit services. UK legislation requires companies to disclose both the fees paid to auditors for audit services as well as the fees paid for non-audit services. I use the log of these variables in this analysis. In common with a number of other studies, the log of assets is included as the most appropriate size variable and the log of the number of subsidiaries is used to represent complexity (Cobbin, 2002; Hay *et al.*, 2006). A further refinement is offered to the classification of subsidiaries by including a separate variable to indicate cases where the audit client has a subsidiary in the US since the audit of US subsidiaries is likely to expose auditors to greater risk due to the more litigious nature of US stakeholders (Seetharaman *et al.*, 2002; O'Sullivan, 2009). Consistent with previous studies, a number of variables are used to represent auditor risk: the proportion of total assets represented both by inventory and accounts receivable, the level of financial gearing and the firm's return on assets (Cobbin, 2002; Hay *et al.*, 2006; Zaman *et al.,* 2011).

Earlier research studies have used proportion of non-executive directors as proxy for board independence (O'Sullivan, 2000; Carcello *et al.,* 2002; Zaman *et al.,* 2011). This study uses boards comprised of majority independent directors as well as the proportion of independent non-executive directors serving on the board of directors to represent board independence and the number of board meetings to represent board diligence. It should be noted that this study utilizes governance disclosures subsequent to Higgs (2003) and now it is possible to identify independent non-executives rather than just non-executives as used in O'Sullivan (2000) and Zaman *et al.,* (2011). Following O'Sullivan (2000), this study also includes a variable representing the log of the number of days between a company's financial year-end and the date in which the audit report is signed. O'Sullivan (2000) suggests that longer delays may indicate more troublesome audits and consequently lead to higher audit fees. Two variables are included to represent auditor characteristics: a binary variable to differentiate between Big-4 and non-Big-4 auditors, since a number of previous studies have reported evidence suggesting that larger auditors may charge a premium for their audits (Craswell *et al.*, 1995; Moizer, 1997; Francis, 2004), and a binary variable to indicate audits undertaken by London-based auditors since a number of UK studies have found that such audits are more expensive compared to audits undertaken by regional auditors (Chan *et al.*, 1993; O'Sullivan, 2000).

3.8.2 Audit Committee Characteristics and Earnings Quality Models

This stage of the study also utilizes four main empirical models. Similar to the first phase of this study, in model 1 this study uses the dummy variables for each of the four audit committee characteristics currently recommended as best practice for UK listed companies, while in model 2 these dummy variables are substituted with corresponding variables containing the absolute values for each of these four variables. In model 3 a dummy variable representing those firms whose audit committees satisfy all four of the recommended characteristics (ACE1) and in model 4 dummy variable is extended to include both the presence of an accounting expert and the absence of members with excess of nine years' tenure (ACE2). The empirical models to test the relationship between the audit committee characteristics and earnings quality using

earnings management models developed by McNichols (2002) and Francis *et al.,* (2005) as proxies to measure earnings quality are as follows.

3.8.2.1 McNichols (2002) Models

Model 1: EQMCNICHOLS = β0 + β1ACSIZE + β2AC%IND + β3ACMEETINGS + β4AC%FINEXP + β5AC%SHAREOWN + β6ACAVEDIRECTORSHIPS + β7BOARDINDDUMMY + β8BOARDMEETINGS + β9BIG4 + β10LOGDELAY + β11LOGTOTALASSETS + β12%GEARING + β13ROA + β14CFO + β15LOSS + β16%BLOCKOWN + β17INDUSTRY + β18TIME + ε.

Model 2: EQMCNICHOLS = β0 + β1ACSIZEDUMMY + β2ACINDDUMMY + β3ACMEETINGSDUMMY + β4ACFINEXPDUMMY + β5AC%SHAREOWN + β6ACAVEDIRECTORSHIPS + β7BOARDINDDUMMY + β8BOARDMEETINGS + β9BIG4 + β10LOGDELAY + β11LOGTOTALASSETS + β12%GEARING + β13ROA + β14CFO + β15LOSS + β16%BLOCKOWN + β17INDUSTRY + β18TIME + ε.

Model 3: EQMCNICHOLS = β0 + β1ACE1 + β2AC%SHAREOWN + β3ACAVEDIRECTORSHIPS + β4BOARDINDDUMMY + β5BOARDMEETINGS + β6BIG4 + β7LOGDELAY + β8LOGTOTALASSETS + β9%GEARING + β10ROA + β11CFO + β12LOSS + β13%BLOCKOWN + β14INDUSTRY + β15TIME + ε.

Model 4: EQMCNICHOLS = β0 + β1ACE2 + β2AC%SHAREOWN + β3ACAVEDIRECTORSHIPS + β4BOARDINDDUMMY + β5BOARDMEETINGS + β6BIG4 + β7LOGDELAY + β8LOGTOTALASSETS + β9%GEARING + β10ROA + β11CFO + β12LOSS + β13%BLOCKOWN + β14INDUSTRY + β15TIME + ε.

3.8.2.2 Francis *et al.,* (2005) Models

Model 1: EQFRANCIS = β0 + β1ACSIZE + β2AC%IND + β3ACMEETINGS + β4AC%FINEXP + β5AC%SHAREOWN + β6ACAVEDIRECTORSHIPS + β7BOARDINDDUMMY + β8BOARDMEETINGS + β9BIG4 + β10LOGDELAY + β11LOGTOTALASSETS + β12%GEARING + β13ROA + β14CFO + β15LOSS + β16%BLOCKOWN + β17INDUSTRY + β18TIME + ε.

Model 2: EQFRANCIS = β0 + β1ACSIZEDUMMY + β2ACINDDUMMY + β3ACMEETINGSDUMMY + β4ACFINEXPDUMMY + β5AC%SHAREOWN + β6ACAVEDIRECTORSHIPS + β7BOARDINDDUMMY + β8BOARDMEETINGS + β9BIG4 + β10LOGDELAY + β11LOGTOTALASSETS + β12%GEARING + β13ROA + β14CFO + β15LOSS + β16%BLOCKOWN + β17INDUSTRY + β18TIME + ε.

Model 3: EQFRANCIS = β0 + β1ACE1 + β2AC%SHAREOWN + β3ACAVEDIRECTORSHIPS + β4BOARDINDDUMMY + β5BOARDMEETINGS + β6BIG4 + β7LOGDELAY + β8LOGTOTALASSETS + β9%GEARING + β10ROA + β11CFO + β12LOSS + β13%BLOCKOWN + β14INDUSTRY + β15TIME + ε.

Model 4: EQFRANCIS = β0 + β1ACE2 + β2AC%SHAREOWN + β3ACAVEDIRECTORSHIPS + β4BOARDINDDUMMY + β5BOARDMEETINGS + β6BIG4 + β7LOGDELAY + β8LOGTOTALASSETS + β9%GEARING + β10ROA + β11CFO + β12LOSS + β13%BLOCKOWN + β14INDUSTRY + β15TIME + ε.

Dependent variable:

EQMCNICHOLS = absolute value of the residual from equation (1)[18] as a measure of accruals quality and EQFRANCIS = residual value from equation (2)[19] as the estimate of the discretionary component of the firms accruals quality

Independent variables: Big4 = dummy variable indicating instances where the audit was carried out by a Big4 audit firm; Log Delay = the natural logarithm of audit delay; Log Total Assets = the natural logarithm of total assets; % Gearing = percentage of total long-term finance represented by long term debt; ROA = return on assets; CFO = cash flow from operations; Loss = dummy variable representing the firm incurring loss in last two years; % Block Own = percentage of equity owned by the block holders; Board Ind dummy = dummy variable indicating instances where boards comprised of majority independent directors; Board meetings = the number of meetings held by the board during the year; AC % Share own = percentage of equity held by audit committee members; AC Ave Directorships = average directorships held by the audit committee members; AC Size dummy = dummy variable indicating instances where the audit committee contains three or more members; AC Meetings dummy = dummy

[18] $\Delta WC_t = b0 + b1CFO_{t-1} + b2CFO_t + b3CFOt_{+1} + b4\Delta Rev_t + b5PPE_t + \varepsilon_t$ (1)

[19] $AQ = \alpha + b1SIZE + b2\ LOSS + b3OPCYC + b4\sigma CFO + b5\sigma REV + e_t$ (2)

variable indicating instances where the audit committee held at least three meetings; AC Ind dummy = dummy variable indicating instances where the audit committee had solely independent non-executive directors; AC Fin Exp dummy = dummy variable indicating instances where the audit committees had financial expertise; AC Size = number of audit committee members; AC Meetings = Number of audit committee meetings held during the year; AC % Ind = Percentage of audit committee members who are independent non-executive directors; AC % Fin Exp = Percentage of audit committee members who are financial experts; ACE1 = dummy variable representing instances where audit committees comprise at least three members, contained at least one financial expert, all members being independent and met at least three times during the financial year; ACE2 = dummy variable representing instances where audit committees comprise at least three members, contained at least one financial expert, all members being independent and met at least three times during the financial year, contains one accounting expert and has no member with more than 9 years tenure; Industry = type of industry; Time = year.

After discussing the association of various audit committee variables and earnings quality in the previous sections, it was important to include control variables that could be associated with audit committees and earnings quality. The board of directors, the external auditors and the audit committee each contribute to effective corporate governance and ultimately the quality of financial reporting (BRC 1999). This study includes several control variables. Auditor type is included as a dummy variable to represent audits undertaken by Big 4 auditors since larger auditors are expected to be more effective than smaller audit firms in enhancing financial reporting quality (Becker *et al.*, 1998, Geiger and Rama, 2006). The study includes total assets since larger firms are more likely to exploit accounting policies to reduce political costs (Warfield *et al.,* 1995). This study also includes a measure of company leverage since prior research documents higher debt as an incentive to manage earnings (Defond and Jiambalvo, 1994). Finally, return on assets is included as a measure of company performance. This study has also included the fixed effects of both the industry and years.

In addition, this study presents various robustness tests of the impact of various audit committee variables on audit quality and earnings quality by utilising different variations of these variables such as expertise, busyness and tenure etc. This part of the analysis, tests of robustness, extends our understanding of the impact of these variations on financial reporting quality.

Table 3.5 - Variable Definitions

Variable Label	Definitions
Audit fee	Audit fee
Log Audit Fee	Log of audit fee
Non Audit Fee Ratio	Non audit fee / Audit Fee
Non Audit Fee Dummy	Dummy Variable (=1 if non-audit fee is higher than the audit fee; = 0 otherwise)
EQ McNichols	Earnings quality measure calculated using McNichols (2002) model
EQ Francis	Earnings quality measure calculated using Francis *et al.,* (2005) model.
ACE1	Dummy variable (=1 if audit committee has 3 or more members; contains 1 expert; comprises only independent directors and has held 3 or more meetings during the year; = 0 otherwise)
ACE2	Dummy variable (=1 if audit committee has 3 or more members; contains one expert; comprises only independent directors; has held 3 or more meetings during the year; contains one accounting expert and has no member with more than 9 years tenure; = 0 otherwise)
ACE3	A scale out of four points, one point for each of the following variables: if audit committee has 3 or more members; contains 1 expert; comprises only independent directors and has held 3 or more meetings during the year.
ACE4	A scale out of six points, one point for each of the following variables: if audit committee has 3 or more members; contains 1 expert; comprises only independent directors; has held 3 or more meetings during the year; contains one accounting expert and has no member with over 9 years tenure.
AC % Fin Exp	Percentage of audit committee members who are financial experts
AC Fin Exp Dummy	Dummy variable (=1 if audit committee has at least one expert member; =0 otherwise)
AC % Acc Exp	Percentage of audit committee members who are accounting experts* *A member with experience as a certified public accountant (CPA), auditor, chief financial officer (CFO), chief financial controller or chief accounting officer
AC % Non Acc Exp	Percentage of audit committee members who are non-accounting experts* *These members include people with work experience as an investment banker, financial analyst, or members with experience of supervising the preparation of financial statements (e.g. chief executive officer or company president).
AC % Gov Exp	Percentage of audit committee members who served on the audit committee of another FTSE listed company at the same time
AC Size	Number of audit committee members
AC Size Dummy	Dummy variable (=1 if there are 3 or more members on audit committee; =0 otherwise)
AC % Ind	Percentage of audit committee members who are independent non-executive directors
AC Ind Dummy	Dummy variable (=1 if all members of audit committee are independent non-executive directors; =0 otherwise)
AC Meetings	Number of audit committee meetings held during the year

Variable Label	Definitions
AC Meetings Dummy	Dummy variable (=1 if number of audit committee meetings are 3 or greater; =0 otherwise)
AC % Tenure 9	Percentage of audit committee members who have served on the board of directors for more than 9 years
AC % Tenure 6	Percentage of audit committee members who have served on the board of directors for more than 6 years
AC Ave Directorships	Average additional directorships held by audit committee members
AC % Addirs1plus	Percentage of audit committee members with at least one additional directorship
AC % Addirs2plus	Percentage of audit committee members with at least two additional directorships
AC % Addirs3plus	Percentage of audit committee members with at least three additional directorships[20]
AC % Share own	Percentage share ownership of audit committee members
Board Ind Dummy	Dummy variable (=1 if majority of the board is comprised of independent non-executive directors[21]; = 0 otherwise)
Board Meetings	Number of board meetings held during the year
Total Assets	Total Assets
Log Total Assets	Log of total assets
Big4	Dummy variable (=1 if audited by PricewaterhouseCoopers, KPMG, Deloitte and Touche or Ernst & Young; = 0 otherwise)
London	Dummy variable (=1 if audit undertaken by London-based auditor; = 0 otherwise)
Audit Delay	Audit delay is the number of days between the financial year-end date and date when the audit report is signed by the auditor
Log Delay	Log of audit delay
Log Subs	Log of total subsidiaries
US Subs Dummy	Dummy variable indicating US subsidiaries (=1if subsidiaries include at least one based in US; = 0 otherwise)
% Debtors	Percentage of total assets represented by debtors
% Stock	Percentage of total assets represented by stock
ROA	Return on assets
CFO	Cash flow from operations
Loss	Dummy variable (=1 if firm has experienced loss; = 0 otherwise)
% Gearing	Percentage of long-term finance represented by long term debt
% Block own	Percentage of shares held by the block holders (owning 3% or more)

[20] This study only includes directorships of companies listed on the *London International Stock Exchange* (excluding directorships in AIM).
[21] Refer to p76.

3.9 Statistical Techniques used to conduct Univariate and Bivariate Analysis

To begin with, the descriptive analysis is performed first that includes sample values such as the mean, median and standard deviation as well as skewness and kurtosis of the sample variables. This then follows by the Pearson correlation matrix to investigate the bivariate association amongst the variables. After going through the correlation, to investigate the mean differences of various variables for large and small firms a Univariate analysis is performed using independent t – tests and Mann Whitney test. Then OLS multivariate regression technique is employed to examine the relationship between a single dependent variable and various explanatory variables. Prior literature suggests that the sample has to fulfil five fundamental assumptions for the OLS regression analysis to be valid (Chen *et al.*, 2003; Hair *et al.*, 2010). These assumptions include: (1) Normality - The errors (residuals) should be normally distributed (2) Linearity - The relationship between the predictors and the response variable should be linear. (3) Homoscedasticity - The error variance should be constant (4) Independent - The errors associated with one observation should not be correlated with the errors of other observations. (5) Multicollinearity - There should be no exact collinearity among predictors. The literature also highlights that mild violations of these five assumptions are robust and unaffected in many situations (Glass and Hopkins, 1984; Newman *et al.*, 1989). Therefore, the multivariate regression analysis is performed using OLS regression analysis technique. Finally robust analysis is carried out using yearly predictors and the big and small firms. Various other tests are also performed to check for the multicollinearity and hetroscedasticity. The statistical software SPSS has been used to conduct the above statistical analysis.

3.10 Summary

This chapter outlines the research method employed in the study. Beginning with the theoretical paradigm, this chapter discusses the use of agency theory as a basis for understanding the role of corporate governance and its assumptions which underpin the present research. The chapter also outlines the main research question to be investigated and discusses the development of the specific hypotheses this study is seeking to investigate. Considering the purpose of this study the main research questions are as follows; 1) Do audit committee characteristics (including: size,

independence, expertise, meetings, busyness, share ownership and tenure) influence the quality of external audit in UK companies? 2) Do audit committee characteristics (including: size, independence, expertise, meetings, busyness, share ownership and tenure) influence the quality of earnings in UK companies? This draws heavily from the literature reviewed in the previous chapter in establishing an academic rationale for the various aspects of enquiry pursued. In particular, hypothesis related to financial reporting quality and audit committee size, expertise, independence, meetings, tenure, share ownership, busyness and overall effectiveness are outlined and justified. After this an explanation and justification for choice of sample is outlined and the principal sources of data for the study are explained. The population for the study consists of FTSE 350 firms that are listed on the London Stock Exchange. As the period of selection for this study is 2007 – 2010, this study includes only those companies that exist throughout this period. This final sample for the audit committee and audit fee analysis equals 991 firm observations and final sample for the non-audit fee ratio analysis equals 948 firm observations. The sample choice for the second empirical of this study examining earnings quality is slightly different from the first empirical investigation of audit quality issues. In line with the prior literature in this area (Peasnell *et al.* 2005; Ghosh, 2010), and to provide an unbiased measure of accrual quality, this study excludes industries with less than 10 observations in any given year. This reduces the pooled sample size from 1400 observations to 691 when examining earnings quality. Since this is a quantitative empirical study, a significant portion of this chapter is devoted to identifying and justifying the dependent and independent variables used in the subsequent empirical analysis. The chapter explains in detail how the dependent variables (i.e. financial reporting quality) are measured, both in terms of audit quality and in terms of earnings quality. The measurement of independent variables are also discussed here (i.e. audit committee size, expertise, meetings, independence, tenure, share ownership, busyness and audit committee effectiveness). The chapter concludes with an explanation of the regression models employed to examine audit committee characteristics and both audit quality and earnings quality. For audit quality, audit effort is measured using audit fee paid to the auditor and audit independence is measured using the non-audit to audit fee ratio. For earnings quality, this study employs McNichols (2002) and Francis *et al.,* (2005) models as its measures

of earnings quality. The statistical techniques used in the univariate and bivariate analysis are also explained.

CHAPTER 4: AUDIT COMMITTEE CHARACTERISTICS AND AUDIT QUALITY – EMPIRICAL ANALYSIS

4.0 Introduction

This chapter begins by outlining the descriptive statistics of the variables employed in the first empirical analysis investigating the influence of audit committee characteristics on audit pricing. The descriptive analysis includes; a comprehensive analysis of the overall sample, a detailed analysis based on four corresponding years and finally a detailed outlook on the statistics at industry level. The chapter then presents the results of the univariate analysis. The univariate analysis contains statistics from both the independent t-test and Mann-Whitney test, highlighting the significant differences in the mean and mean rank values of various audit committee variables for firms that are large in size compared to firms that are small in size. This is followed by a correlation matrix showing a two way Pearson correlation between the variables included in this study. Correlations are important in this type of study as they highlight the associations between audit and non- audit fee ratio and the explanatory variables but also identify the significant correlations among the independent variables. The chapter then presents the results of a detailed multivariate regression analysis (pooled dataset) that investigates the hypotheses set out in the previous chapter. The multivariate analysis includes a robust investigation of the impact of various audit committee characteristics on audit fee and non-audit fee ratio. This chapter also includes a separate analyses for large and small firms. In the non-audit fee ratio section the study also includes a logistic regression analysis to investigate the impact of audit committee characteristics on firms paying higher non-audit services fees compared to audit fees. Finally, this chapter ends by summarizing the results of the first empirical analysis.

4.1 Descriptive Statistics

Table 4.1 contains descriptive statistics for all the variables used in this study. The mean audit fee is £1.681 million with a median of £606,000. The mean non-audit fee paid to the auditor is £1.210 million with a median of £400,000.

Table 4.1 - Descriptive Statistics

Variables	Mean	Median	Std. Deviation	Minimum	Maximum	Skewness	Kurtosis
Audit Fee (000)	1681325	606000	3179448	34000	26400000	4.573	24.847
Log Audit Fee	5.850	5.782	0.545	4.53	7.42	0.379	-0.199
Non Audit Fee (000)	1210107	400000	2564253	0.00	24225000	5.324	35.487
Non Audit Fee Ratio	0.930	0.583	1.129	0.01	12.84	4.706	35.243
Non Audit Fee Dummy	0.280	0	0.448	0.00	1.00	0.995	-1.012
AC Size	3.398	3	0.860	2.00	8.00	0.975	1.932
AC Size Dummy	0.905	1	0.293	0.00	1.00	-2.770	5.682
AC Meetings	3.904	4	1.227	1.00	12.00	1.364	3.929
AC Meetings Dummy	0.940	1	0.237	0.00	1.00	-3.729	11.926
AC % Ind	95.285	100	12.793	0.00	100.00	-2.923	9.368
AC Ind Dummy	0.866	1	0.341	0.00	1.00	-2.149	2.625
AC % Tenure 9	7.249	0	16.675	0.00	100.00	2.694	8.191
AC % Tenure 6	23.533	25	26.420	0.00	100.00	0.910	0.120
AC % Fin Exp	78.389	75	23.891	0.00	100.00	-0.886	0.136
AC Fin Exp Dummy	0.988	1	0.109	0.00	1.00	-8.935	77.995
AC % Acc Exp	34.850	33.333	21.908	0.00	100.00	0.361	0.224
AC % Non Acc Exp	43.540	40	25.640	0.00	100.00	0.070	-0.327
AC % Gov Exp	24.292	25	24.474	0.00	100.00	0.743	-0.062
Ac Ave Directorships	0.725	0.667	0.558	0.00	4.00	0.992	1.673
AC % Addirs1plus	46.193	50	28.781	0.00	100.00	0.089	-0.675
AC % Addirs2plus	18.514	0	22.079	0.00	100.00	1.095	0.950
AC % Addirs3plus	6.590	0	14.357	0.00	100.00	2.231	4.961
AC % Share own	0.356	0.016	3.322	0.00	52.18	12.851	170.553
ACE1	0.748	1	0.435	0.00	1.00	-1.143	-0.696

Variables	Mean	Median	Std. Deviation	Minimum	Maximum	Skewness	Kurtosis
ACE2	0.532	1	0.499	0.00	1.00	-0.128	-1.988
ACE3	3.699	4	0.560	1.00	4.00	-1.816	2.827
ACE4	5.332	6	0.860	2.00	6.00	-1.316	1.436
Board Ind Dummy	0.573	1	0.495	0.00	1.00	-0.296	-1.916
Board Meetings	8.817	8	2.865	1.00	26.00	1.327	4.354
Big 4	0.955	1	0.208	0.00	1.00	-4.374	17.162
London	0.610	1	0.488	0.00	1.00	-0.454	-1.798
Audit Delay	64.190	62	16.408	25.00	152.00	1.248	3.805
Log Delay	1.794	1.792	0.107	1.40	2.18	-0.024	1.375
Total Assets (000s)	4094918	915110	11308102	32794	155952000	7.826	84.651
Log Total Assets	9.037	8.961	0.662	7.52	11.19	0.478	-0.111
% Debtors	16.054	13.778	12.558	0.00	67.09	1.343	2.223
% Stock	11.305	6.917	15.775	0.00	96.42	2.934	10.602
ROA	9.055	7.545	10.786	-83.57	118.56	1.511	21.882
% Gearing	19.264	16.866	16.879	0.000	80.670	-0.340	-0.442
Loss	0.140	0	0.343	0.00	1.00	2.124	2.517
Log Subs	1.221	1.255	0.389	0.00	2.23	-0.319	0.131
US Subs Dummy	0.544	1	0.498	0.00	1.00	-0.177	-1.973
% Block own	38.333	38.19	17.816	0.00	92.40	0.214	-0.221

The average non-audit fee ratio stands at 0.93:1 with a median ratio of 0.58:1. The range of non-audit fee ratio starts from as low as 0.01:1 to and goes as high as 12.84:1. The statistics also reveal that 28 per cent of firms pay more towards non audit fees compared to their audit fees. Of particular interest to this study are the descriptive statistics in relation to the audit committee characteristics. Audit committees have, on average, 3.4 members with a median composition of 3. The requirement for a minimum of three members in the various UK Corporate Governance Codes seems to be largely adhered to with 90.5 per cent of firms meeting these recommendations. Audit committees in this study meet on average 3.90 times during the year with a median of 4 meetings per year. 94 per cent of audit committees meet at least three times per year as currently recommended by regulators. Zaman *et al.*, (2011), using data from 2001 to 2004, reported that only 21 per cent of audit committees had at least three meetings during the year. This suggests that the level of audit committee diligence has improved significantly since the enactment of the Smith Report (2003). 87 per cent of audit committees are comprised only of independent non-executives with the average proportion of independent members at 95.3 per cent. In terms of the additional proxy for independence, the mean presence of members with more than nine years' tenure is only 7.76 per cent. However the mean presence of members with more than six year tenure is 23 per cent. The UK Corporate Governance Code (2010) requires non-executive directors not to serve more than nine years on a company's board as it can become detrimental to their independence and also requires companies to a have a rigorous review of non-executives serving longer than six years.

98.8 per cent of audit committees have at least one financial expert while the average proportion of financial experts on audit committees is 78.39 per cent. This study uses the financial expertise definition provided by the SEC, in which an audit committee member is deemed to be a financial expert if that member has: (a) accounting expertise from work experience as a certified public accountant, auditor, chief financial officer, financial controller or accounting officer; (b) finance expertise from work experience as an investment banker, financial analyst or any other financial management role; or (c) supervisory expertise from supervising the preparation of financial statements (e.g. chief executive officer or company president). The average

proportion of audit committee members who are accounting experts is 34.85 per cent and 43.54 per cent of audit committee members are non-accounting experts. The number of audit committees with at least one member with financial expertise has increased considerably in last few years as prior evidence from the UK suggests that only 70 per cent of audit committees had a financial expert (Zaman *et al.*, 2011). Abbott *et al.*, (2003) while examining US evidence, report that 80 per cent of audit committees had at least one member with financial expertise. The average proportion of governance experts i.e. audit committee member with other audit committee experience on audit committees is 24.3 per cent.

In addition to audit committee characteristics recommended by governance regulation, this study also captures the ownership of audit committee members since there is a strong argument, as well as some supporting evidence, that audit committee members with an equity stake in their companies may be more effective in their oversight of the financial reporting process. As expected, the summary statistics presented in table 4.1 show that the ownership levels of the average audit committee is quite low at 0.356 per cent with an even lower median of only .016 per cent. This study also investigates the impact of holding multiple directorships on audit committee's monitoring effectiveness. The average additional directorship held by audit committees in this study is .725 with a median of .667 with a range from 0 to a maximum of 4 directorships. This study also constructs variables representing the proportion of audit committee members with one or more, two or more or three or more additional directorships, with mean values for these variables of 46.19 per cent, 18.51 per cent and 6.59 per cent respectively.

ACE1, which shows compliance with all four aspects of recommended best practice for audit committees, reveals that 74.8 per cent of audit committees are in full compliance while the mean score of compliance (i.e. ACE3) is 3.69 out of 4. When the composite variables are extended to include both the presence of an accounting expert and the absence of members with excess of nine years' tenure, the proportion of companies in compliance reduces to 53.2 per cent with the mean score of compliance (ACE4) at 5.33 out of a maximum 6.

For board of director variables, the independence level of corporate boards in the UK has shown some improvement as O'Sullivan (2000) reports this percentage to be at 41.17 per cent. This study also finds that 57.3 per cent of FTSE 350 boards are comprised of majority independent directors as required by the UK Corporate Governance Code (2010). The average frequency of board meetings is 8 meetings per year with a median of 8 meetings. The average board meeting frequency is similar to prior UK and US studies such as Zaman *et al.*, (2011) and Abbott *et al.*, (2003). Of the other audit fee determinants, 54.4 per cent of firms have at least one US subsidiary; the mean ROA of firms is 9.05 per cent; gearing levels are on average 19.26 per cent and 38.33 per cent of equity is owned by the block holders. Zaman *et al.*, (2011) reported gearing level at 15 per cent, which is significantly lower than this study. This could be due to the changing risk levels for UK firms in the recent years. However the finding in relation to block holder ownership is similar to prior UK evidence as O'Sullivan (2000) reported block holder ownership at 31.92 per cent. The average company size based on total assets is £4094 million; 16 per cent and 11 per cent of total assets are represented by debtors and stock respectively. Audit delay is averaging at 64 days; 61 per cent of audits are undertaken by London-based auditors; and 95.5 per cent of audits are undertaken by one of the big 4 auditing firms. O'Sullivan (2000) using 1992 data, recorded audit delay at 85 days, audits undertaken by London based auditors at 57 per cent and audits conducted by big 6 auditors at 86 per cent. The latter figure reflects the continued domination of this segment of the listed company audit market by big 4 auditors.

4.1.1 Descriptive Statistics – Year wise

Table 4.2 contains descriptive statistics on a yearly basis. The average audit fee paid to the auditor from 2007 to 2010 is £1.596million, 1.638million, 1.724million and £1.766 million respectively. The non-audit to audit fee ratio in this period remains 1.1, 0.87, 0.84 and 0.92 respectively. The analysis also shows that 31 per cent of firms in 2007, 25 per cent of firms in 2008, 29 per cent of firms in 2009 and 26 per cent of firms in 2010 have paid more towards non-audit compared to audit fees. The study reveals a

continuous increase and a large scale adherence to various UK Corporate Governance Code requirements in relation to audit committee size, independence, meetings and expertise level. From 2007 to 2010, audit committees fulfilling the size requirement of a minimum of three members have increased from 87 per cent to 95 per cent, meeting at least three or more times have increased from 91.5 per cent to 95.6 per cent and comprised of all independent directors have increased from 94 per cent to 96 per cent. Audit committee members with over nine year tenure have slightly reduced from 7.76 per cent to 6.47 per cent in the four year period from 2007 to 2010 however members with over six year tenure have increased from 23 per cent to 25 per cent in the same period. Percentage of audit committee members with governance expertise i.e. experience of serving on other audit committees have increased from 20.78 per cent to 25.54 per cent during the sample period. Average directorships held by the audit committee members remain the same between 2007 and 2010 and same is the case with members with at least 1, two or more and three or more directorships. The composite measures of audit committee effectiveness (i.e. ACE1 to ACE4) show a continuous upward trend of compliance with the UK Corporate Governance Code (2010), revealing an increase of 70 per cent to 79 per cent for audit committees complying with all four aspects of recommended best practice (i.e. ACE1) with the mean score of compliance going up from 3.61 to 3.76 out of 4 (i.e. ACE3). Similarly when the composite variable includes both the presence of an accounting qualified person and the absence of members with excess of nine years' tenure (i.e. ACE2), the proportion of companies in compliance increased from 46.7 per cent to 58.9 per cent and mean score of compliance (i.e. ACE4) has gone up from 5.21 to 5.43 out of a maximum 6.

Table 4.2: Descriptive Statistics - year wise

Variables	2007		2008		2009		2010	
	Mean	**Median**	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
Audit Fee (000)	1596238	616569	1637652	600000	1724451	654000	1766100	617000
Log Audit Fee	5.815	5.790	5.846	5.778	5.870	5.816	5.869	5.790
Non Audit Fee (000)	1275757	400000	1183764	300000	1232992	356915	1148352	400000
Non audit Fee Ratio	1.101	0.645	0.873	0.250	0.828	0.290	0.921	0.260
Non audit Fee Dummy	0.31	0	0.25	0	0.29	0	0.26	0
AC Size	3.350	3.000	3.363	3.000	3.406	3.000	3.472	3.000
AC Size Dummy	0.874	1.000	0.887	1.000	0.908	1.000	0.952	1.000
AC Meetings	3.813	4.000	3.931	4.000	3.964	4.000	3.907	4.000
AC Meetings Dummy	0.915	1.000	0.944	1.000	0.956	1.000	0.948	1.000
AC % Ind	94.119	100	95.917	100	95.509	100	95.585	100
AC Ind Dummy	0.837	1.000	0.883	1.000	0.871	1.000	0.871	1.000
AC % Fin Exp	75.920	75.000	77.288	75.000	80.509	100	79.812	80
AC Fin Exp Dummy	0.988	1.000	0.988	1.000	0.988	1.000	0.988	1.000
AC % Acc Exp	33.215	33.333	34.709	33.333	35.891	33.333	35.565	33.333
AC % Non Acc Exp	42.705	33.333	42.579	36.667	44.618	50.000	44.246	50.000
AC % Gov Exp	20.783	16.667	24.130	25.000	26.670	25.000	25.544	25.000
AC % Tenure 9	7.761	0.000	7.392	0.000	7.380	0.000	6.465	0.000
AC % Tenure 6	23.026	0.000	22.312	20.000	23.766	25.000	25.025	25.000
Ac Ave Directorships	0.713	0.667	0.728	0.667	0.754	0.667	0.706	0.667
AC % Addirs1plus	44.896	40.000	47.365	50.000	47.030	50.000	45.469	40.000
AC % Addirs2plus	18.276	7.143	18.557	0.000	19.290	20.000	17.927	0.000
AC % Addirs3plus	6.159	0.000	6.258	0.000	7.423	0.000	6.512	0.000
AC % Share own	0.437	0.014	0.262	0.015	0.254	0.016	0.471	0.017
ACE1	0.703	1.000	0.742	1.000	0.759	1.000	0.786	1.000
ACE2	0.467	0.000	0.532	1.000	0.538	1.000	0.589	1.000
ACE3	3.614	4.000	3.702	4.000	3.723	4.000	3.758	4.000
ACE4	5.211	5.000	5.327	6.000	5.357	6.000	5.431	6.000
Board Ind Dummy	0.512	1.000	0.540	1.000	0.598	1.000	0.641	1.000
Board Meetings	8.561	8.000	9.065	9.000	8.992	9.000	8.649	8.000

Variables	2007		2008		2009		2010	
	Mean	**Median**	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
Big 4	0.951	1.000	0.952	1.000	0.952	1.000	0.964	1.000
London	0.602	1.000	0.613	1.000	0.594	1.000	0.633	1.000
Audit Delay	65.024	63.000	64.552	62.000	63.823	62.000	63.367	61.000
Log Delay	1.800	1.799	1.797	1.792	1.791	1.792	1.789	1.785
Total Assets (000)	3264807	722850	4077188	932450	4419420	909200	4610253	980650
Log Total Assets	8.961	8.859	9.046	8.970	9.058	8.959	9.081	8.992
% Debtors	11.673	7.458	11.582	7.085	10.994	6.440	10.976	6.527
% Stock	16.888	13.998	16.526	14.506	15.320	13.467	15.490	13.675
ROA	26.088	27.087	27.194	29.333	26.930	29.223	24.977	27.370
% Gearing	11.529	9.392	8.573	7.242	6.760	6.097	9.388	7.555
Loss	0.09	0.000	0.13	0.000	0.12	0.000	0.20	0.000
Log Subs	1.202	1.217	1.231	1.279	1.215	1.230	1.237	1.267
US Subs Dummy	0.524	1.000	0.532	1.000	0.550	1.000	0.569	1.000
% Block own	38.855	38.350	38.041	38.650	37.028	36.450	39.418	39.210

The study also shows that 51 per cent of the boards were comprised of majority independent directors in 2007 and this figure has increased to 64 per cent in 2010. The average number of board meetings recorded between 2007 and 2010 remain 8 to 9 meetings per year. Of the other audit fee determinants; audits conducted by big 4 auditors have increased from 95.1 per cent to 96.4 per cent; audits performed by London based auditors have increased from 60 to 63 per cent and the audit delay has decreased from 65 to 63 days. The mean of total assets has increased considerably from £3264 million to £4610 million; Percentage of total assets represented by debtors and stock has remained the same over the four year period; ROA and gearing levels have decreased marginally from 26.08 per cent to 27.37 per cent and 11.52 per cent to 9.38 per cent respectively; number of firms experiencing loss have increased from 9 per cent to 20 per cent; and the number of firms with at least one US subsidiary has increased from 52 to 57 per cent.

4.1.2 Descriptive Statistics – Industry wise

Table 4.3 contains industry level descriptive statistics. Following Zaman *et al.,* (2011) the London Stock Exchange classification list of industries was consolidated and five industry categories were derived. The results show that general industrial sector pays substantially more audit and non-audit fee as compared to other four sectors. The mean value of audit and non-audit fee for general industrial sector is £4.15 million and £3.02 million respectively and this amount is approximately three to four times higher than the average audit and non-audit fee paid by the services sector with an audit fee value of £1.17 million and non-audit fee value of £935 thousands. The substantial difference in audit fee levels is possibly due to the difference in audit complexity level of these sectors. The average non-audit to audit fee ratio is highest for the consumer sector (1.135:1) and lowest for the minerals sector (0.821:1) compared to their counterparts. The analysis also shows that 31 per cent of firms in the consumer sector, 23 per cent of firms in the minerals sector, 38 per cent of firms in the general industrial sector, 27 per cent of firms in the services sector and 31 per cent of firms in the utilities sector have paid more towards non-audit compared to audit fees.

In terms of audit committee size the mean value is over three members for all the industries, however adherence to the recommended best practice (e.g. having at least three members) is highest in the general industrial sector and lowest in the consumer goods sector with average audit committees' compliance level standing at 96 per cent and 86 per cent respectively. The average number of audit committee meetings in the general industrial, services and utilities sectors is over four meetings and over 90 per cent of audit committees in all the five industries have shown compliance to audit committee meetings requirement. The statistics show that on average over 93 per cent of audit committee members in these industries are independent with a highest value of 96.84 per cent in the mineral industry. 92.4 per cent of audit committees in the general industrial sector are fully independent and in compliance with the best practice guidelines as compared to 81.3 per cent of audit committees in the services industries. On average over 75 per cent of audit committee members in every industry are considered as financial experts as per SEC definition however when splitting the definition of financial expertise into accounting and non-accounting expertise the statistics highlight that the majority of these experts are non-accounting experts. General industrial, services and utilities sector companies have at least one financial expert on their audit committees followed by minerals and consumer goods industries where on average 98 per cent of the audit committees follow the best practice guidelines. The proportion of audit committee members with other audit committee experience for mineral industry is 28.70 per cent followed by the services and utilities industries with values of 24.93 per cent and 23.39 per cent respectively.. Audit committee members in the general industrial sector tend to serve longer on their respective company boards with 20.99 per cent of audit committee members in the general industrial sector serving longer than nine years as compared to their counterparts i.e. consumer goods, minerals, services and utilities sectors where approximately 4 to 6 per cent of the members have longer than 9 year tenure on their respective board of directors. The mean value of average directorships held by the audit committee is highest in the minerals and utilities industries - .79 and .75 respectively as compared to the lowest mean value of .50 for the general industrial industry. 54.94 per cent of audit committee members in the utilities sector hold at least one other directorship whereas only 32.78 per cent of audit committee members

in the general industrial sector holds at least one additional directorship. The percentage of equity held by the audit committee is quite low in all the industries with a highest value of 1.951 per cent and lowest value of .077 per cent for general industrial and consumer goods sectors respectively. 82.3 per cent of audit committees in the general industrial sector are in full compliance (i.e. ACE1) with the governance code followed by the utilities sector (82.1 per cent), minerals sector (78 per cent), consumer goods (72.9 per cent) and services sector (70.2 per cent). When the composite variables are extended to include both the presence of an accounting expert and the absence of members with excess of nine years' tenure, the proportion of companies in compliance reduces to 55.3 per cent in the services sector, 55.1 per cent in the minerals sector, 53.7 per cent in the consumer goods, 46.4 per cent in the utilities sector and 40.5 per cent in the general industrial sector.

Other than audit committee variables, board independence is highest in the general industrial sector with 73.4 per cent of boards are composed of majority independent directors as compared to the 53.7 per cent of boards in the minerals sector. Average board meetings in the utilities sector seem to be higher as compared to the rest of the sectors. The mean value of board meetings in the utilities sector is 9.75 and median value is 10. On average 98.8 per cent of external audit in the services sector were carried out by big4 accounting firms as compared to the utilities sector where the mean value stands at 85.7 per cent. The mean value of audits performed by the London based auditors is 87.3 per cent for general industrial sector as compared to the lowest mean value of 50.3 per cent for the minerals sector. Audit delay is also highest for the general industrial sector with a mean value of 75.4 days whereas the lowest audit delay stands at 60.6 days for utilities sector. In terms of total assets, utilities sector has the highest mean for total assets followed by the general industrial sector, consumer goods sector, minerals sector and finally services sector. As expected, 25.07 per cent of total assets in the consumer goods sector are represented by debtors where as in the utilities sector only 1.87 per cent of total assets are represented by debtors. Similarly 20 per cent of the mineral sector' total assets are represented by stock however only 9 per cent of the total assets in the utilities sector are represented by stock. ROA is highest for the utilities sector at 33.04 per cent followed by the

services sector ROA of 29.73 per cent; general industrial sector has the highest gearing level; mineral sector has the highest proportion (16 per cent) of firms experiencing loss; 79 per cent of firms in the minerals sector have at least one US subsidiary where as only 23 per cent firms in the consumer goods sector has a US subsidiary; and at least 40 per cent of equity in the general industrial and services sector is owned by the block holders.

Table 4.3: Descriptive Statistics - Industry wise

Variables	Consumer Goods		Minerals		General Industrial		Services		Utilities	
	Mean	**Median**	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
Audit Fee (000)	1615395	312500	1546910	611500	4150106	1879200	1169099	690000	2293953	650000
Log Audit Fee	5.710	5.495	5.862	5.786	6.196	6.274	5.832	5.839	5.956	5.812
Non Audit Fee (000)	1152218	297000	1029293	320500	3018870	1252800	935154	400000	1518723	712000
Non audit Fee Ratio	1.135	0.310	0.821	0.230	1.041	0.380	0.874	0.270	0.978	0.310
Non Audit Fee Dum	0.31	0	0.23	0	0.38	0	0.27	0	0.31	0
AC Size	3.445	3.000	3.324	3.000	3.595	3.000	3.354	3.000	3.589	3.000
AC Size Dummy	0.862	1.000	0.916	1.000	0.962	1.000	0.906	1.000	0.929	1.000
AC Meetings	3.757	4.000	3.679	3.000	4.215	4.000	4.076	4.000	4.179	4.000
AC Meetings Dummy	0.940	1.000	0.936	1.000	0.899	1.000	0.950	1.000	0.964	1.000
AC % Ind	95.971	100.000	96.841	100.000	95.570	100.000	93.735	100.000	93.452	100.000
AC Ind Dummy	0.885	1.000	0.902	1.000	0.924	1.000	0.813	1.000	0.839	1.000
AC % Fin Exp	76.512	75.000	78.936	80.000	75.506	75.000	79.066	75.000	82.738	100.000
AC Fin Exp Dummy	0.977	1.000	0.980	1.000	1.000	1.000	0.997	1.000	1.000	1.000
AC % Acc Exp	34.968	33.333	34.476	33.333	30.802	33.333	36.465	33.333	32.202	33.333
AC % Non Acc Exp	41.544	50.000	44.459	33.333	44.705	33.333	42.601	36.667	50.536	45.000
AC % Gov Exp	19.130	16.667	28.699	33.333	19.895	20.000	24.930	25.000	23.393	20.000
AC % Tenure 9	6.156	0.000	6.177	0.000	20.992	0.000	6.223	0.000	4.048	0.000
AC % Tenure 6	19.602	0.000	25.231	25.000	32.574	33.333	23.392	25.000	17.976	0.000
ACE1	0.729	1.000	0.780	1.000	0.823	1.000	0.702	1.000	0.821	1.000
ACE2	0.537	1.000	0.551	1.000	0.405	0.000	0.553	1.000	0.464	0.000
ACE3	3.665	4.000	3.733	4.000	3.785	4.000	3.667	4.000	3.732	4.000
ACE4	5.307	6.000	5.358	6.000	5.114	5.000	5.386	6.000	5.268	5.000
AC Ave Directorships	0.693	0.667	0.786	0.667	0.504	0.400	0.740	0.667	0.749	0.750

Variables	Consumer Goods		Minerals		General Industrial		Services		Utilities	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
AC % Addirs1plus	44.417	42.857	49.037	50.000	32.785	33.333	46.530	50.000	54.940	66.667
AC % Addirs2plus	17.761	7.143	20.800	25.000	13.650	0.000	18.564	0.000	15.923	0.000
AC % Addirs3plus	5.696	0.000	7.477	0.000	3.207	0.000	7.447	0.000	4.911	0.000
AC % Share own	0.077	0.016	0.453	0.023	1.951	0.006	0.116	0.014	0.143	0.001
Board Ind Dummy	0.583	1.000	0.537	1.000	0.734	1.000	0.547	1.000	0.661	1.000
Board Meetings	8.651	9.000	8.615	8.000	7.759	8.000	9.190	8.500	9.750	10.000
Big 4	0.913	1.000	0.980	1.000	0.899	1.000	0.988	1.000	0.857	1.000
London	0.569	1.000	0.503	1.000	0.873	1.000	0.664	1.000	0.643	1.000
Audit Delay	65.216	61.000	65.115	64.000	75.430	74.000	60.725	59.000	60.607	58.500
Log Delay	1.800	1.785	1.801	1.806	1.861	1.869	1.773	1.771	1.774	1.767
Total Assets (000)	4605647	951114	2377033	573311	8935602	2323870	1813189	957050	18292986	3901850
Log Total Assets	9.118	8.978	8.849	8.758	9.375	9.366	8.974	8.981	9.615	9.591
% Debtors	25.073	15.916	13.170	12.701	3.826	2.776	4.188	0.728	1.868	0.534
% Stock	11.186	9.317	20.033	18.971	7.351	6.493	18.857	15.958	9.127	7.687
ROA	25.338	25.712	23.243	26.077	20.743	22.249	29.734	33.170	33.039	38.926
% Gearing	9.179	9.498	8.257	7.206	12.242	9.481	9.199	7.195	7.423	5.232
Loss	0.14	0.000	0.16	0.000	0.13	0.000	0.11	0.000	0.14	0.000
Log Subs	1.042	1.021	1.312	1.342	1.323	1.447	1.244	1.301	1.157	1.203
US Subs Dummy	0.234	0.000	0.791	1.000	0.392	0.000	0.582	1.000	0.429	0.000
% Block own	36.014	37.455	38.391	38.315	40.960	44.050	40.798	38.830	28.295	27.525

4.2 Univariate Analysis

Table 4.4 contains univariate statistics from independent t-test and Mann-Whitney test highlighting the significant differences in the mean and mean rank values of various audit committee variables for firms that are large in size compared to firms that are small in size. Since larger companies are considered to be the high profile companies in the stock market and have considerably high coverage from the media and market analysts, these companies are expected to be associated with better governance mechanisms and expected to be seeking a higher standard of audit committee composition. This univariate analysis is conducted by splitting the sample into larger and smaller sub-samples using the median value of the firm size (total assets).

The statistics from the table show that on average larger firms pay significantly higher audit fees and non-audit services fees as compared to smaller firms. This finding highlights the fact that larger companies are more complex to audit and hence require more audit effort and consequently result in higher audit fees. Larger firms are also better resourced and can afford to pay for more audit coverage as compared to their counterparts. The mean value of non-audit fee ratio is significantly lower in large firms as compared to small firms. The analysis also suggests that on average audit committee size, number of meetings and percentage independence is significantly higher in those firms that are larger in size as compared to those that are smaller in size. Similarly the mean and mean rank values of companies that have full compliance with the UK Corporate Governance Code (2010) in relation to audit committee size, meetings and independence is significantly higher for larger companies than those that are small in size. As expected, the proportion of audit committee members with tenure of over nine years is significantly lower in larger firms compared to smaller firms. The results also show that the number of audit committees with at least one financial expert on the committee are significantly higher for firms that are larger in size as compared to those that are small in size. The mean and mean rank values of the proportion of audit committee members with financial expertise is also higher for larger firms however the difference is not statistically significant.

Table 4.4: Univariate Analysis

	Mean		T Value (Sig)	Mean Rank		Z Value (Sig)
	Large firms	Small firms		Large firms	Small firms	
Audit Fee	2884341	475878	12.878***	673.22	318.42	19.514***
Log Audit Fee	6.182	5.518	24.155***	673.22	318.42	19.514***
Non Audit Fee	2020188	487164	9.460***	610.02	334.92	15.472***
Non audit Fee Ratio	0.848	1.014	-2.262**	465.34	486.95	-1.564
Non audit Fee Dummy	0.255	0.301	-1.565	465.64	483.63	-1.012
AC Size	3.688	3.107	11.288***	580.44	411.39	10.235***
AC Size Dummy	0.970	0.840	7.117***	528.02	463.92	6.945***
AC Meetings	4.220	3.588	8.386***	575.85	415.99	9.236***
AC Meetings Dummy	0.982	0.899	5.593***	516.51	475.45	5.509***
AC % Ind	98.180	92.384	7.318***	536.06	455.86	7.450***
AC Ind Dummy	0.946	0.786	7.578***	535.53	456.39	7.371***
AC % Tenure 9	5.357	9.145	-3.597***	479.88	512.16	-2.564**
AC % Tenure 6	22.161	24.909	-1.639	490.43	501.58	-.649
AC Fin Exp Dummy	0.998	0.978	2.917***	501.00	490.99	2.906***
AC % Fin Exp	79.470	77.306	1.426	502.82	489.16	.794
AC % Acc Exp	32.636	37.067	-3.198***	465.66	526.40	-3.420***
AC % Non Acc Exp	46.833	40.239	4.080***	528.77	463.16	3.669***
AC % Gov Exp	24.273	24.310	-.023	494.19	497.82	-.208
ACE1	0.895	0.600	11.362***	569.05	422.80	10.692***
ACE2	0.613	0.451	5.187***	536.19	455.73	5.120***
ACE3	3.895	3.503	11.763***	571.41	420.44	10.968***
ACE4	5.544	5.119	8.029***	550.81	441.07	6.682***
AC Ave Directorships	0.774	0.677	2.736***	522.19	469.76	2.903***
AC % Addirs1plus	49.642	42.737	3.802***	527.14	464.80	3.469***
AC % Addirs2plus	19.786	17.239	1.818*	507.63	484.35	1.379
AC % Addirs3plus	6.623	6.556	.074	497.71	494.29	.271
AC % Share own	0.035	0.678	-3.059***	355.25	637.04	-15.497***
Board Ind Dummy	0.700	0.446	8.324***	558.65	433.22	8.051***
Board Meetings	8.862	8.771	0.501	499.73	492.26	.414
Big4	0.990	0.919	5.420***	513.51	478.46	5.344***
London	0.734	0.487	8.233***	557.13	434.74	7.969***
Log Delay	1.770	1.818	-7.201***	428.87	563.27	-7.393***
% Stock	11.484	11.126	.356	485.69	506.33	-1.136
% Debtors	13.466	18.647	-6.633***	435.08	557.05	-6.707***
% Gearing	31.060	21.527	11.021***	588.40	403.42	10.172***
ROA	7.071	11.044	-5.896***	433.40	558.73	-6.892***
Loss	0.097	0.097	-.010	495.95	496.05	-.010
Log Subs	1.308	1.134	7.194***	555.13	436.75	6.513***
US Subs Dummy	0.569	0.519	1.560	508.22	483.76	1.559
% Block own	33.270	43.406	-9.336***	411.40	580.77	-9.314***

Upon further examination the study reveals that the firms that are larger in size have higher percentage of non-accounting financial experts and firms are smaller in size have higher percentage of audit committee members with accounting expertise. The average additional directorships held by audit committees as well as the proportion of audit committee members with at least one additional directorship is significantly higher for companies that are large in size compared to those that are small in size. The summary statistics also show that the mean value of the audit committee share ownership is significantly lower for larger firms as compared smaller firms.

The study also shows that the audit committee effectiveness as defined by the audit committee composite variables i.e. compliance with all four aspects of recommended best practice for audit committees (ACE1 and ACE3) or when the composite variables are extended to include both the presence of an accounting qualified expert and the absence of members with excess of nine years' tenure (ACE2 and ACE4), the proportion of audit committees in compliance is significantly higher for larger firms as compared to smaller firms. The above findings highlight that larger companies are associated with higher standard of audit committee composition.

For board of director variables, the average number of boards comprised of independent non-executive directors is significantly higher for larger firms as compared to smaller firms. Of the other audit fee determinants, the mean value of audits undertaken by one of the big 4 auditing firms and the mean value of audits undertaken by London-based auditors is significantly higher for firms that are large in size as compared to those that are small. The mean and mean rank value for the audit delay is significantly lower in larger firms compared to the smaller firms. The other financial variables whose mean and mean rank values are significantly higher for larger firms include gearing levels and the number of subsidiaries. However average assets represented by debtors, return on assets and equity owned by the block holders is significantly low for companies that are larger in size as compared to small size firms.

4.3 Correlation Matrix

Table 4.5 contains a correlation matrix showing two-way Pearson correlations between all variables included in this study. Correlations are interesting in this type of study as they highlight the associations between audit and non- audit fee ratio and the explanatory variables but also identify the significant correlations among the independent variables. The double and single asterisks in table 4.5 signify statistically significant correlations at one per cent and five per cent respectively. The correlations in column 1 and 2 show how each of the explanatory variables are associated with the log of audit fees and non-audit fee ratio. As expected, company size, the number of subsidiaries, the presence of a US subsidiary, a London-based auditor, big 4 audits and the value of non-audit services provided by the auditor are all positively correlated with audit fees. The negative correlation between audit fee and the proportion of assets in the form of stocks may reflect the reality that stocks are now relatively easier to audit due to advances in audit technology. However, the negative and significant correlation between audit fees and the length of audit delay is somewhat counter-intuitive as longer periods of delay indicate additional auditor investigation and hence higher fees (Chan *et al*., 1993; Ezzamel *et al*., 1996). The study also shows a significant and negative correlation between the equity owned by the block holders and audit fees which is consistent with the prior studies such as Zaman *et al.*, (2011) and Krishnan and Visvanathan (2009). Consistent with a few prior studies, the correlations in column 1 also show that board independence is positively associated with audit fees however it is unclear as to why the frequency of board meetings is negatively correlated with audit fees. This finding may be influenced by the supply-based perspective where auditor associate the higher board diligence with more effective monitoring and hence exert less audit effort and reduced audit fee (Krishnan and Visvanathan, 2009).

Table 4.5: Audit and non-audit fee ratio correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1Log Audit Fee	1																	
2Non-audit Fee Ratio	-.151**	1																
3AC Size	.418**	-.040	1															
4AC Size Dummy	.203**	-.045	.527**	1														
5AC Meetings	.358**	-.041	.212**	.160**	1													
6AC Meetings Dummy	.187**	-.052	.116**	.137**	.405**	1												
7AC % Ind	.231**	-.026	.025	-.012	.112**	.120**	1											
8AC Ind Dummy	.243**	-.024	.010	-.047	.092**	.114**	.937**	1										
9AC % Tenure 9	-.099**	-.076*	-.015	-.035	-.067*	-.107**	-.246**	-.206**	1									
10AC % Tenure 6	-.037	-.082*	.029	-.051	-.063*	-.074*	-.135**	-.129**	.553**	1								
11C % Fin Exp	.139**	-.097**	-.002	.032	.082**	.042	-.010	.010	-.053	-.035	1							
12AC Fin Exp Dummy	.140**	-.018	.159**	.279**	.067*	.011	-.041	-.044	-.063*	-.111**	.363**	1						
13AC % Acc Exp	-.092**	-.001	-.243**	-.185**	-.013	.004	-.030	-.037	-.061	-.057	.376**	.176**	1					
14AC % Non Acc Exp	.209**	-.079*	.206**	.187**	.087**	.036	.016	.041	.003	.016	.611**	.188**	-.504**	1				
15AC % Gov Exp	-.015	.057	-.076*	.005	.005	.073*	.095**	.076*	-.173**	-.117**	.152**	.009	.196**	-.026	1			
16ACE1	.343**	-.048	.342**	.557**	.275**	.433**	.635**	.678**	-.193**	-.144**	.065*	.191**	-.107**	.151**	.065*	1		
17ACE2	.138**	.007	.156**	.345**	.146**	.268**	.393**	.420**	-.464**	-.294**	.104**	.118**	.217**	-.088**	.175**	.619**	1	
18ACE3	.360**	-.063	.362**	.608**	.324**	.566**	.607**	.624**	-.201**	-.158**	.111**	.320**	-.083**	.175**	.082*	.925**	.573**	1
19ACE4	.237**	.004	.197**	.390**	.229**	.450**	.473**	.476**	-.596**	-.394**	.190**	.333**	.265**	-.050	.205**	.684**	.828**	.749**
20AC Ave Dirs	.077*	.065*	-.002	.017	.029	.109**	.103**	.070*	-.223**	-.127**	.246**	.042	.236**	.028	.615**	.063*	.194**	.106**
21AC % Addirs1plus	.138**	-.007	.023	.023	.023	.106**	.150**	.117**	-.221**	-.113**	.267**	.039	.172**	.102**	.519**	.099**	.184**	.135**
22AC % Addirs2plus	.042	.097**	-.002	.022	.056	.098**	.054	.026	-.180**	-.125**	.192**	.044	.251**	-.035	.577**	.043	.184**	.078*
23AC % Addirs3plus	-.018	.114**	-.023	.005	-.010	.059	.018	.002	-.113**	-.081*	.111**	.008	.175**	-.046	.365**	.002	.093**	.030
24AC % Share own	-.099**	.000	.004	.027	-.080*	-.080*	-.345**	-.234**	.275**	.139**	.016	.010	-.054	.060	-.040	.160**	-.102**	-.160**
25Board Ind Dummy	.355**	-.038	.266**	.257**	.146**	.050	.320**	.331**	-.068*	-.071*	.081*	.110**	-.074*	.138**	-.020	.382**	.188**	.378**
26Board Meetings	-.107**	.049	-.057	-.030	.189**	.044	-.004	-.018	-.117**	-.104**	.013	.009	.063*	-.041	.100**	-.008	.090**	-.007

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
27Big4	.189**	.017	.163**	.178**	.054	.068*	.201**	.198**	-.143**	-.018	.053	-.024	.000	.049	.099**	.230**	.194**	.238**
28London	.379**	-.053	.196**	.102**	.208**	.114**	.050	.074*	-.008	-.028	.049	.044	-.027	.068*	.018	.151**	.126**	.155**
29Log Delay	-.164**	.106**	-.148**	-.181**	-.061	-.111**	-.112**	-.090**	.082**	.003	.016	-.045	.034	-.014	-.024	-.207**	-.094**	-.206**
30Log Total Assets	.765**	-.047	.441**	.239**	.312**	.182**	.258**	.270**	-.123**	-.064*	.077*	.129**	-.105**	.162**	-.031	.384**	.160**	.391**
31% Stock	-.165**	.109**	-.014	-.023	-.083**	.017	.046	.041	-.045	.002	-.027	-.036	.053	-.071*	.049	.023	.009	.013
32% Debtors	.005	-.154**	-.061	-.028	-.028	-.041	-.028	-.040	-.054	.019	-.013	.004	.005	-.016	.032	-.077*	-.006	-.056
33% Gearing	.242**	-.009	.141**	.060	.046	.103**	.097**	.103**	-.141**	-.074*	.070*	.096**	-.056	.113**	.024	.130**	.153**	.156**
34ROA	-.081*	-.074*	-.015	-.015	-.044	-.046	.018	.004	.060	.031	-.007	-.019	-.028	.018	-.093**	-.023	-.095**	-.029
35Loss	-.025	.082*	-.024	.013	.040	-.004	-.003	-.001	-.036	-.013	-.025	-.026	.051	-.057	.088**	.017	.041	-.001
36Log Subs	.498**	-.096**	.196**	.088**	.173**	.073*	.074*	.090**	-.052	.009	.070*	.043	-.042	.101**	.013	.113**	.028	.140**
37US Subs Dummy	.386**	-.115**	.110**	.049	.128**	.069*	.027	.020	-.065*	.019	.100**	-.009	.001	.093**	.112**	.047	.034	.065*
38% Block own	-.263**	.088**	-.226**	-.116**	-.071*	-.031	-.030	-.018	.016	-.007	-.039	-.161**	.032	-.064*	.063*	-.102**	-.024	-.116**

	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
19ACE4	1																			
20AC Ave Dirs	.256**	1																		
21AC % Addirs1plus	.248**	.818**	1																	
22AC % Addirs2plus	.225**	.855**	.516**	1																
23AC % Addirs3plus	.127**	.723**	.324**	.614**	1															
24AC % Share own	-.213**	-.077*	-.105**	-.024	-.043	1														
25Board Ind Dummy	.246**	.007	.050	-.012	-.029	-.104**	1													
26Board Meetings	.089**	.069*	.082*	.036	.054	-.045	-.004	1												
27Big4	.231**	.180**	.197**	.143**	.083**	-.084**	.067*	.006	1											
28London	.121**	.020	.034	.033	-.016	-.014	.277**	-.057	-.045	1										
29Log Delay	-.129**	-.076*	-.069*	-.057	-.054	.181**	-.147**	-.033	-.167**	-.146**	1									
30Log Total Assets	.266**	.114**	.156**	.075*	.023	-.095**	.320**	-.036	.182**	.278**	-.258**	1								
31% Stock	.019	.070*	.054	.073*	.036	-.011	.010	.031	-.019	-.077*	.104**	-.051	1							
32% Debtors	-.026	-.012	.030	-.031	-.052	-.042	-.107**	.054	.096**	-.101**	.033	-.286**	-.062*	1						
33% Gearing	.182**	.062*	.078*	.042	.006	-.059	.092**	.065*	.215**	.027	-.141**	.377**	-.141**	-.065*	1					
34ROA	-.077*	-.076*	-.035	-.100**	-.063*	-.017	-.065*	-.106**	-.065*	-.022	.021	-.215**	-.096**	.159**	-.255**	1				
35Loss	.012	.032	.006	.063*	.029	.022	.021	.086**	.055	-.039	-.028	.000	.087**	-.113**	-.022	-.207**	1			
36Log Subs	.088**	.018	.058	.000	-.025	-.034	.081*	-.043	.118**	.147**	.022	.295**	-.165**	.137**	.109**	-.058	-.060	1		
37US Subs Dummy	.076*	.106**	.136**	.063*	.061	-.095**	.103**	-.012	.131**	.149**	-.087**	.105**	-.121**	.225**	-.023	-.036	-.022	.475**	1	
38% Block own	-.063*	-.035	-.072*	-.017	.020	-.094**	-.038	-.027	.074*	-.013	.101**	-.356**	.017	.008	-.022	-.027	.084**	-.043	-.037	1

In respect of the audit committee characteristics, a number of variables show significant and positive correlations with audit fees. For example, audit committee size, the annual frequency of meetings, and the level of independent membership are positively correlated with audit fees suggesting, at the univariate level at least, that larger, more diligent, and more independent audit committees are associated with more expensive audits. There is also a positive association between both the proportion of financial experts and audit fees suggesting that greater expertise on the committee may result in more intensive and more expensive audits. Audit committee non-accounting expertise is significant and positively correlated with audit fees however there is significant and negative correlation among accounting expertise and audit fees. This is consistent with Krishnan and Visvanathan (2009) who argue that accounting experts provide greater monitoring and hence result in lower audit fees charged by the auditor. Percentage equity held by the audit committee members and the proportion of members with nine or over nine year tenure are also negatively correlated with audit fees as both these characteristics i.e. share ownership and the longer tenure can have a negative impact on the independence of audit committee members and hence a negative impact on audit quality. Finally, all four of the proxies for audit committee effectiveness are significant and positively correlated with audit fees but the significance of both ACE1 and ACE3, representing compliance with the four core components of present audit committee regulation, is especially pronounced.

The correlations in column 2 show that proportion of equity held by the block holders and audit delay are positively correlated with non-audit fee ratios. The numbers of subsidiaries, the presence of a US subsidiary and return on assets are all negatively correlated with non-audit fee ratio. With regards to audit committee characteristics, as expected, audit committee additional directorships are positively associated with non-audit fee ratio. Prior research suggests that additional directorships result in a conflict of interest and directors focus more on their own interests than on stakeholder interests (Fich and Shivdasani, 2006). The proportion of audit committee members with financial expertise are negatively correlated with non-audit fee ratio. This implies that stronger audit committees might be more reluctant to authorize a disproportional provision of non-audit services in an effort to increase perceived auditor independence.

The proportion of members with over six year tenure as well as over nine year tenure is negatively correlated with non-audit fee ratio. Prior research shows that accumulated experience of monitoring management by serving longer on the corporate boards enhances directors' effectiveness (Kosnik, 1990; Hermalin and Weisbach, 1991). None of the audit committee effectiveness variables i.e. ACE1 to ACE4 are correlated with non-audit fee ratio.

A positive correlation between independent boards and audit committee effectiveness variables shows that independent directors promote effectiveness of audit committees to complement further their own monitoring responsibilities. Correlation amongst the other individual variables show that large size companies (e.g. high total assets) are more likely to have audit committees that are bigger in size, more independent and have higher meeting frequency. The negative correlation amongst the company size and audit committee tenure related variables suggest that bigger firms can afford to freshen up their boards more regularly as compared to smaller firms. Consistent with prior evidence larger companies appears to have independent boards, audited by big 4 accounting firms and experience less audit delay. A positive correlation between company size and number of subsidiaries and overseas subsidiaries is expected as larger companies are more likely to have more subsidiaries and some of their operations overseas. Large companies are also associated less block holder ownership suggesting that equity is more likely to be owned in small holdings. Bivariate correlations are also important as higher correlation between variables suggest a higher likelihood of multicollinearity and hamper the findings derived from multivariate regression analysis. Hair *et al.*, (1995) and Gujrati (2003) suggest that a correlation value of below 0.80 is deemed to be safe for the variables to be included together in the multivariate regression analysis. Consistent with prior studies a high correlation exists between the log audit fee and company size represented by log total assets. The correlation value is .727 whereas O'Sullivan (2000) and Zaman *et al.*, (2011) recorded this as .783 and .688 respectively. There are variables in the correlation matrix that have high correlations between each other; .937 for percentage audit committee independence and binary variable representing fully independent audit committees; .882 proportion of members with nine or over nine year tenure and

binary variable representing an audit committee with or without such member; and between audit committee average directorships and proportion of members with at least one or more (.818), two or more(.855) and three or more directorships (.723). However all of these highly correlated variables have been included separately in each of the regression models and none of the variables in each of the models have a correlation value of above 0.80.

4.4 Multivariate Regression Analysis

Skewness and kurtosis values presented earlier in the chapter indicate that some of the variables were transformed using natural logarithm in order to satisfy the normality assumption for these variables. This study also conducted the analysis of residuals and Q-Q plot analysis to test for homoscedasticity and linearity. In all audit pricing studies researchers need to be conscious of the possibility of multicolinearity, not least due to the presence of significant correlations amongst some of the independent variables as shown in table 4.5. Although the correlation values of the variables included in each of the regression model were at an acceptable level, for all regressions this study calculates the variance inflation factors (VIF) and in all cases these were significantly less than 10 (generally seen as the level of concern). Indeed, with the exception of Log of total assets which recorded a VIF of 2 on a few occasions, all other variables have values significantly less than 2. Gujrati (2003, p339) states that a VIF value of less than 10 is acceptable.

4.4.1 Audit Committee Characteristics and Audit Fees

Table 4.6 contains the results of four main multivariate regression models. In each regression model the dependent variable is the log of the audit fee. For each regression this study utilises time series analysis using year dummies to control for the fact that the study uses the same sample of firms in each of the four years (2007-10). In all regressions industry dummies are included to control for sector level variations. In all regressions the control variables are used to represent company size, complexity level, performance, gearing and the presence of a big 4 audit firm. Each regression

model also includes the share ownership of audit committee members and a measure of audit committee busyness. In model 1 of table 4.6 this study uses the dummy variables for each of the four audit committee characteristics currently recommended as best practice for UK listed companies (Combined Code, 2006 and 2008; UK Corporate Governance Code, 2010) while in model 2 these dummy variables are substituted with corresponding variables containing the absolute values for each of these four variables. In models 3 and 4 this study employs variables capturing audit committee effectiveness: in model 3 a dummy variable representing those firms whose audit committees satisfy all four of the recommended characteristics (ACE1) and in model 4 dummy variable is extended to include both the presence of an accounting expert and the absence of members with excess of nine years' tenure (ACE2).

The regression results in column 1 show broad consistency with expectations and with most prior studies of the determinants of audit pricing in the UK (O'Sullivan, 2000; Zaman et al., 2011). Firms in the mineral extraction and general industrial sectors have a positive association with audit fees and the consumer goods, services and utilities sectors have significant negative association with audit fees. These findings suggest that regulatory oversight partially substitutes the external audit as a monitoring mechanism and results in lower audit fees. None of the yearly variables is significantly associated with audit fees. The log of total assets[22] has a very significant and positive impact on audit fees while both the number of subsidiaries and the presence of at least one US-based subsidiary also exert a significant and positive impact on audit fees. As expected, the proportion of assets in the form of debtors (receivables) has a positive impact but, unlike earlier findings, the proportion of assets in the form of stock (inventories) has a negative impact on audit fees. Even though the latter result is inconsistent with prior findings, it may also highlight the relative ease with which modern auditing technologies can undertake the auditing of stock and, therefore, this finding may be a more accurate reflection of contemporary auditing practice. As expected, the length of delay between a company's financial year-end and the date the audit report is signed off by the auditor also exerts a positive impact on audit fees. This finding is typically interpreted as a sign that the audit is more complicated and

[22] The log of turnover is also positively associated with audit fees and significant at one per cent level.

therefore requires more time and resources to be completed adequately. The results in column 1 also show that return on assets has a significant positive impact on audit fees. The level of gearing has no significant association with audit fees however firms experiencing loss have a significant positive impact on audit fees. These findings suggest that better performing companies can afford to pay for extensive audit and hence result in higher audit fee. Similarly, higher levels of gearing or loss is viewed as presenting a higher risk to auditors, specifically the risk of client failure and, as a consequence, is expected to be associated with a higher audit fee. The statistics also show that audits undertaken by London-based auditors result in higher fees, a finding consistent with almost all previous UK-based research (O'Sullivan, 2000; Ezzamel *et al.,* 1996). The study finds that being audited by a big 4 audit firm has no impact on audit fees. This is not surprising since recent work by McMeeking *et al.* (2006) has highlighted the gradual disappearance of the big 4 audit premium in the UK market since the late 1990s. Percentage of equity held by the block holders has also shown no impact on the audit fees. Finally, consistent with most prior research, the amount of non-audit services purchased from the auditor has a positive impact on audit fees. Taken together therefore, the results presented in column 1 confirm that audit fees in large listed firms remain largely determined by client size, complexity, risk, London-based auditors and the level of non-audit services also purchased from the auditor.

Table 4.6: OLS regressions explaining the determinants of audit fees for FTSE 350 companies between 2007 and 2010 (***, **, * denote statistical significance at 1%, 5% and 10% respectively)

	Model 1		Model 2		Model 3		Model 4	
	Coef	T-Value	Coef	T-Value	Coef	T-Value	Coef	T-Value
Constant	-.347	-1.373	-.029	-.118	-.152	-.625	-.159	-.655
Consumer Goods	-.103	-3.867***	-.104	-3.935***	-.097	-3.613***	-.098	-3.674***
Mineral Extraction	.035	.957	.030	.830	.034	.921	.033	.878
Services	-.089	-4.093***	-.095	-4.407***	-.080	-3.686***	-.081	-3.743***
Utilities	-.229	-5.709***	-.239	-5.989***	-.226	-5.598***	-.228	-5.624***
2008	-.007	-.291	-.006	-.292	-.006	-.248	-.005	-.235
2009	.014	.633	.011	.476	.016	.700	.016	.712
2010	-.033	-1.466	-.035	-1.545	-.033	-1.467	-.033	-1.435
Log Total Assets	.531	26.572***	.513	25.082***	.531	26.351***	.531	26.692***
Log Subs	.192	7.658***	.183	7.342***	.190	7.552***	.190	7.554***
US Subs Dummy	.138	6.847***	.135	6.764***	.144	7.081***	.143	7.071***
% Debtors	.007	9.057***	.006	8.926***	.006	8.890***	.006	8.900***
% Stock	-.002	-3.826***	-.002	-3.633***	-.002	-3.789***	-.002	-3.791***
Log Delay	.189	2.311**	.170	2.093**	.204	2.479**	.203	2.477**
ROA	.003	3.090***	.002	2.806**	.002	2.976***	.002	2.981***
% Gearing	.000	-.048	.000	.515	.000	.209	.000	.247
Loss	.069	2.459**	.063	2.271**	.067	2.388**	.067	2.395**
London	.132	7.380***	.128	7.193***	.137	7.614***	.138	7.624***
Big 4	-.039	-.892	-.064	-1.499	-.068	-1.579	-.065	-1.510
% Block own	.000	-.415	.000	-.591	.000	-.545	.000	-.554
Log Non Audit Fee	.061	8.861***	.061	8.953***	.062	9.017***	.062	9.020***
Board Ind Dummy	.006	6.687***	.005	5.230***	.005	5.874***	.005	6.262***
Board Meetings	-.013	-4.479***	-.015	-5.104***	-.012	-4.235***	-.012	-4.196***
AC % Share own	-.002	-.680	-.003	-1.060	-.002	-.758	-.002	-.794
AC Ave Directorships	-.019	-1.169	-.017	-.926	-.013	-.774	-.012	-.738
AC Size Dummy	-.079	-2.545**						
AC Meetings Dummy	.115	3.347***						
AC Ind Dummy	-.040	-1.480						
AC Fin Exp Dummy	.178	2.323**						
AC Size			.006	.551				
AC Meetings			.032	4.520***				
AC % Ind			-.001	-.760				
AC % Fin Exp			.001	3.115***				
ACE1					.004	.184		
ACE2							-.007	-.438
F Test	135.270***		138.250***		147.580***		148.509***	
Adjusted R^2	.830		.833		.828		.827	
N	991		991		991		991	

Definitions of variables

Dependent variable: the natural log of audit fee

Independent variables: Log Total Assets = the natural logarithm of total assets; Log Subs = the natural logarithm of total consolidated subsidiaries; US Subs dummy = dummy variable indicating US subsidiaries; Debtors = percentage of total assets represented by debtors; % Stock = percentage of total assets represented by stock; Log Delay = the natural logarithm of audit delay; ROA = return on assets; % Gearing = percentage of total long-term finance represented by long term debt; Loss = dummy variable representing the firm incurring loss in last two years; London = dummy variable representing firms audited by a London based auditor; Big4 = dummy variable indicating instances where the audit was carried out by a Big4 audit firm; % Block Own = percentage of equity owned by the block holders; % Log Non Audit Fee = the natural logarithm of non audit fee; Board Ind dummy = dummy variable indicating instances where boards comprised of majority independent directors; Board meetings = the number of meetings held by the board during the year; AC % Share own = percentage of equity held by audit committee members; AC Ave Directorships = average directorships held by the audit committee members; AC Size dummy = dummy variable indicating instances where the audit committee contains three or more members; AC Meetings dummy = dummy variable indicating instances where the audit committee held at least three meetings; AC Ind dummy = dummy variable indicating instances where the audit committee had solely independent non-executive directors; AC Fin Exp dummy = dummy variable indicating instances where the audit committees had financial expertise; AC Size = number of audit committee members; AC Meetings = Number of audit committee meetings held during the year; AC % Ind = Percentage of audit committee members who are independent non-executive directors; AC % Fin Exp = Percentage of audit committee members who are financial experts; ACE1 = dummy variable representing instances where audit committees comprise at least three members, contained at least one financial expert, all members being independent and met at least three times during the financial year; ACE2 = dummy variable representing instances where audit committees comprise at least three members, contained at least one financial expert, all members being independent and met at least three times during the financial year, contains one accounting expert and has no member with more than 9 years tenure.

The board independence dummy variable representing boards comprised of majority independent directors has a positive impact on audit fees[23], a finding consistent with prior research which argues that greater independence on the board is likely to result in more intensive and expensive external audit. This is an important contribution of this study as most of the prior UK based evidence has utilised non-executive directors as a proxy for independence. Surprisingly board meetings have a significant negative impact on audit fees. This finding is counter-intuitive as researchers have typically argued that higher meetings frequency results in higher audit fees however this finding may be influenced by the supply-based perspective where auditor associate the higher board diligence with more effective monitoring and hence exert less audit effort and reduced audit fee (Krishnan and Visvanathan, 2009). Other than the board governance, audit committee average directorships and the level of equity ownership of audit committee members has no significant impact on the audit fees. The negative coefficient for the audit committee level of share ownership is surprising as audit committee members with an equity stake in their companies are considered more effective in their oversight of the financial reporting process.

The remainder of this table focuses on the impact of the four current cornerstones of good audit committee governance in the UK – size, meeting frequency, independence and the presence of a financial expert. The dummy variable signifying those firms possessing at least three audit committee members is significant however in the direction opposite to prediction. The dummy variable representing those companies whose audit committee meets at least three times annually has a significant and positive impact on audit fees highlighting the support of active audit committees for higher audit quality. Similar significant and positive impact is reported for dummy variable representing audit committees with at least one financial expert on the committee. Consistent with prior research, this finding shows that financial experts provide additional support to external auditors in the discussion of auditing issues and audit scope with management (Abbott *et al.,* 2003a). In model 2 dummy variables are substituted with corresponding continuous variables containing the absolute values for each of these four variables. Audit committee size in terms of actual number of audit

[23] The proportion independent non-executive directors also have a significant positive impact on audit fees.

committee members, although positively correlated with audit fee, is statistically insignificant. The number of audit committee meetings has significant and positive impact on audit fees suggesting that higher audit committee activity is associated with higher fees. This is a very interesting result since the number of meetings is frequently used as a measure of audit committee diligence so the relationship identified here is consistent with greater audit committee diligence being associated with more intensive and expensive audits. Similar significant and positive impact is reported for the proportion of financial experts on the audit committee. These findings are interesting in that they identify a consistent impact of good governance practice on audit fees and should serve as reassuring to regulators who may interpret this finding as supportive of their recommendations, at least if interpreted as more expensive audits equals more intensive audits.

In model 3 and 4 of table 4.6 the researcher brings in the composite dummies representing those firms adhering to all four recommendations of best practice (ACE1) and those that comply with best practice as in ACE1 but, in addition, have no member with longer than nine years' tenure and also has at least one accounting expert (ACE2). The findings from model 3 show that audit committees with all four desired characteristics (ACE1) have no significant impact on audit fees. The variable representing ACE2, although positively correlated, also has no significant impact on audit fees[24].

In summary therefore, the empirical findings reported in table 4.6 find that the key ingredients of what regulators perceive as more effective audit committees i.e. meetings and expertise are associated with more expensive audits. These findings are largely consistent with previous research in the US by Abbott *et al.* (2003) who documents a positive relationship between audit committee expertise and audit fees. In the only previous UK-based study, Zaman *et al.* (2011) also document that meeting frequency exerts a positive impact on audit fees. It should be noted, however, that,

[24] Two alternative effectiveness variables (ACE3 and ACE4) are introduced representing the aggregate count of each of these elements of compliance from ACE1 and ACE2. ACE3 that represents the aggregate count of the ACE1 elements and the ACE4 that represents the aggregate count of ACE2 variable has no significant influence on audit fees.

unlike the current study, Zaman et al (2011) found no significant impact of the presence of a financial expert on audit fees. This may suggest that expertise may have become a more significant determining factor in more recent times, especially in the wake of the recommendations of Smith (2003) which the data used in Zaman *et al.*'s (2011) study largely predates[25]. The F-statistics of each model in table 4.6 are significant at one per cent level, suggesting that the models are statistically valid. The adjusted R^2 for all models ranges between 82.8 per cent and 83.3 per cent. This shows that each model on this table has a high explanatory power. The total number of observations are 991.

[25] Zaman *et al.* (2011) study a sample of FTSE-350 companies over the period 2001-2004. Compliance with the revised Combined Code (2003), which included the recommendations of the Smith Report (2003), became effective for reporting periods beginning on or after 1st November 2003.

4.4.2 Tests of Robustness

As a first robustness measure this study re-runs the main regression models reported in Table 4.6, controlling for the clustered adjusted standard errors, and examines whether the clustering within firms may have biased the estimated standard errors which may have affected, to some extent, the significant levels found for the estimated coefficients. These tests show that the findings reported in the main regression analysis specifically in relation to audit committee meetings and audit committee financial expertise hold strong and are not sensitive to this approach. In addition to this, a number of other robustness measures were also considered which are discussed below.

Table 4.7 provides a detailed analysis of audit committee financial expertise, audit committee busyness and audit committee tenure variables and extends our understanding of the impact of these variables on audit fees. In model 1, the proportion of audit committee members with accounting expertise has been included instead of broadly defined financial expertise and model 2 includes the proportion of members with non-accounting expertise. In models 3 and 4, this study utilises variables representing the extent of holding other directorships by audit committee members: the proportion of members holding one or more additional directorships in model 3 and the proportion of members holding two or more additional directorships in model 4. Regression models 5 and 6 represent an alternative measure of audit committee independence. In model 5 this study utilizes the proportion of audit committee members with nine or over nine year tenure and model 6 represents the proportion of members with six or over six year of tenure.

In model 1 the proportion of accounting financial experts[26] on the audit committee has no significant impact on audit fees. However in model 2 the percentage of non-accounting audit committee members has a positive and significant (at one per cent level) impact on audit fees suggesting that more members with finance and supervisory related expertise enhance the degree of assurance undertaken by auditors

[26] The dummy variable representing audit committees with at least one accounting expert and the proportion of audit committee members with accounting qualification has no impact on audit fees.

and result in extensive and expensive audit. This finding is important as it suggests that, in the UK at least, it is the presence of broader financial experts that appear to influence audit fees. This finding is consistent with the argument presented in Krishnan and Krishnan (2009) that these audit committee members with broader expertise do not have the experience to help them understand multifaceted accounting issues. Therefore to reduce litigation risk these members prefer to authorise an extensive and expensive audit. The proportion of audit committee members with governance expertise i.e. experience of serving on other audit committees positively associated with audit fees but the relationship is statically insignificant (un-tabulated).

Table 4.7: OLS regressions explaining the determinants of audit fees for FTSE 350 companies between 2007 and 2010 (***, **, * denote statistical significance at 1%, 5% and 10% respectively)

	AC Expertise Variations				AC Busyness Variations				AC Tenure Variations			
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Coef	T-Value	Coef	T-Value	Coef	T-Value	Coef	T-Value	Coef	T-Value	Coef	T-Value
Constant	-.178	-.728	-.149	-.617	-.334	-1.319	-.339	-1.345	-.357	-1.404	-.351	-1.379
Log Total Assets	.530	26.384***	.527	26.432***	.529	26.448***	.530	26.577***	.528	26.553***	.528	26.533***
Log Subs	.192	7.663***	.192	7.678***	.193	7.698***	.192	7.669***	.191	7.614***	.190	7.594***
US Subs Dummy	.136	6.737***	.133	6.590***	.138	6.800***	.138	6.817***	.141	7.041***	.142	7.056***
% Debtors	.007	9.064***	.007	9.132***	.007	9.126***	.007	9.057***	.007	9.014***	.007	8.989***
% Stock	-.002	-3.771***	-.002	-3.653***	-.002	-3.889***	-.002	-3.842***	-.002	-3.874***	-.002	-3.905***
Log Delay	.192	2.332**	.179	2.186**	.189	2.308**	.188	2.296**	.194	2.366**	.194	2.364**
ROA	.003	3.053***	.002	2.894***	.003	3.051***	.002	3.039***	.002	3.008***	.002	2.999***
% Gearing	.000	.132	.000	-.115	.000	-.017	.000	-.041	.000	-.047	.000	-.078
Loss	.068	2.438**	.072	2.579**	.069	2.473**	.070	2.497**	.069	2.477**	.069	2.463**
London	.133	7.378***	.132	7.367***	.132	7.377***	.133	7.408***	.133	7.438***	.133	7.439***
Big 4	-.050	-1.150	-.048	-1.100	-.046	-1.044	-.040	-.928	-.047	-1.099	-.049	-1.140
% Block own	.000	-.694	.000	-.744	.000	-.387	.000	-.415	.000	-.445	.000	-.429
Log Non Audit Fee	.063	9.129***	.062	9.062***	.061	8.848***	.061	8.859***	.062	8.906***	.062	8.885***
Board Ind Dummy	.006	6.600***	.006	6.570***	.006	6.721***	.006	6.665***	.006	6.593***	.006	6.580***
Board Meetings	-.013	-4.462***	-.012	-4.411***	-.013	-4.504***	-.013	-4.516***	-.012	-4.373***	-.012	-4.380***
AC % Share own	-.002	-.749	-.003	-1.004	-.002	-.645	-.002	-.645	-.002	-.620	-.001	-.519
AC Ave Directorships	-.017	-.999	-.018	-1.109					-.018	-1.067	-.019	-1.127
AC Size Dummy	-.060	-1.781	-.074	-1.460	-.076	-1.450	-.078	-1.523	-.069	-1.271	-.068	-1.247
AC Meetings Dummy	.112	3.262***	.113	3.310***	.113	3.289***	.115	3.351***	.112	3.274***	.112	3.263***
AC Ind dummy	-.041	-1.502	-.043	-1.582	-.040	-1.477	-.041	-1.502				
AC Fin Exp Dummy					.173	2.260**	.177	2.321**	.181	2.369**	.183	2.378**
AC % Acc Exp	.000	-.089										
AC % Non Acc Exp			.001	3.202***								
AC % Addir1plus					.000	-.051						
AC % Addir2plus							.000	-1.157				
AC % Tenure 9									.000	.774		
AC % Tenure 6											.000	.562
Industry dummies	Included		Included		Included		Included		included		included	
Year dummies	Included		Included		Included		Included		included		included	
F Test	134.968***		136.052***		135.083***		135.756***		135.483***		135.351***	
Adjusted R^2	.828		.830		.828		.830		.829		.829	
N	991		991		991		991		991		991	

Definitions of variables

Dependent variable: the natural log of audit fee

Independent variables: Log Total Assets = the natural logarithm of total assets; Log Subs = the natural logarithm of total consolidated subsidiaries; US Subs dummy = dummy variable indicating US subsidiaries; Debtors = percentage of total assets represented by debtors; % Stock = percentage of total assets represented by stock; Log Delay = the natural logarithm of audit delay; ROA = return on assets; % Gearing = percentage of total long-term finance represented by long term debt; Loss = dummy variable representing the firm incurring loss in last two years; London = dummy variable representing firms audited by a London based auditor; Big4 = dummy variable indicating instances where the audit was carried out by a Big4 audit firm; % Block Own = percentage of equity owned by the block holders; % Log Non Audit Fee = the natural logarithm of non audit fee; Board Ind dummy = dummy variable indicating instances where boards comprised of majority independent directors; Board meetings = the number of meetings held by the board during the year; AC % Share own = percentage of equity held by audit committee members; AC Ave Directorships = average directorships held by the audit committee members; AC Size dummy = dummy variable indicating instances where the audit committee contains three or more members; AC Meetings dummy = dummy variable indicating instances where the audit committee held at least three meetings; AC Ind dummy = dummy variable indicating instances where the audit committee had solely independent non-executive directors; AC Fin Exp dummy = dummy variable indicating instances where the audit committees had financial expertise; AC % Acc Exp = Percentage of audit committee members who are accounting experts; AC % Non Acc Exp = percentage of audit committee members who are non-accounting experts; AC % Addir1plus = percentage of audit committee members with at least one additional directorship; AC % Addir2plus = percentage of audit committee members with at least two additional directorships; AC % Tenure 9 = percentage of audit committee members who have served on company board for more than 9 years; AC % Tenure 6 = percentage of audit committee members who have served on company board for more than 6 years.

In models 3 and 4 this study substitutes the audit committee average directorship holding variable with variables representing the extent of holding of other directorships by audit committee members: the proportion holding one or more additional directorships in model 3 and two or more additional directorships in model 4. In table 4.7, holding at least one or more and two or more other board seats is not significant. The holding of at least three or more directorships has a significant negative impact on audit fees however the statistical significance is not very strong and stands at 10 per cent level (un-tabulated). This finding suggests that holding too many directorships decrease the effectiveness of audit committee members in terms of ensuring an effective audit. In regressions model 5 and 6 this study investigates the importance of tenure of audit committee members on audit fees by including variables representing the proportion of members with excess of nine years' tenure and the proportion of members with over six years' tenure. The results show that none of these variables are significant in determining audit fees.

The regression results presented in table 4.7 provide some interesting additions in understanding the impact of a variety of audit committee financial expertise and holding of multiple directorships on audit fees in a contemporary setting. First, these findings highlight the importance of various dimensions of financial expertise in the determination of UK audit fees and illustrate the positive and significant relationship between the proportion of non-accounting financial experts and audit fees. Second, findings in relation to holding of additional directorships by the audit committee members show that these multiple directorships result in busy and overstretched directors who are unable to pay adequate attention to external audit issues and hence result in a low quality and less expensive audit.

The rest of the regression results for each model are broadly consistent with the main regression models on table 4.6. The log of total assets, the number of subsidiaries and the presence of at least one US-based subsidiary are consistently showing a significant and positive impact on audit fees at one per cent level. The proportion of assets in the form of debtors (receivables) has a positive impact however the proportion of assets in the form of stock (inventories) has a negative impact on audit fees. The significance

level of both these variables is one per cent respectively. As expected, the length of delay between a company's financial year-end and the date the audit report is signed off by the auditor also exerts a positive impact on audit fees. The statistics also show that audits undertaken by London-based auditors result in higher fees and the amount of non-audit services purchased from the auditor also has a positive impact on audit fees. The positive association of return on assets and audit fees suggests that better performing companies can afford to pay for extensive audit and hence result in higher audit fee. Firms experiencing loss are also associated with higher audit fee. This may be due to the reason that poorly performing firms are more likely to ask for higher external consulting services to improve their profitability (DeFond *et al.,* 2002; Whisenant *et al.,* 2003). Each regression model shows that the boards comprised of majority independent directors has a significant positive impact on audit fees and number of board meetings have significant negative impact on audit fees. Consistent with the prior evidence, the finding in relation to board independence suggests that greater independence on the board is likely to result in more intensive and expensive external audit (O'Sullivan, 2000). Even though the latter result is inconsistent with prior findings it may be influenced by the supply-based perspective where auditor associate the higher board diligence with more effective monitoring and hence exert less audit effort and reduced audit fee (Krishnan and Visvanathan, 2009). Other than the board governance, as expected, audit committees that satisfy the regulatory requirement of meeting at least three times as well as those with at least one financial expert exert a positive and significant impact on audit fees. These findings suggest that stronger audit committees are more effective in enhancing audit quality. The significance level of both these variables is one per cent and five per cent respectively. The F-statistics for all models are significant at one per cent level, suggesting that the models are statistically valid. The adjusted R^2 for all models ranges between 82.8 per cent and 83 per cent. This shows that each model on this table has a high explanatory power. The total number of observations in each model are 991.

Other than the above analysis of the audit committee expertise, busyness and tenure variations, the study also measures the impact of those audit committees on audit fees that are bigger in size and meet more frequently. Dummy variables are created using

median values of the audit committee size and meetings (un-tabulated). The new audit committee size and meetings variables representing audit committees with a size and number of meetings higher than the sample median values show that audit committees comprised of at least four members has no impact on audit fees however audit committees that meet at least five times every year are highly positive significant with audit fees[27]. The study also splits the sample into two parts based on the median of total assets as proxy of size and runs separate regressions for larger and smaller firms. Appendix A represents larger and smaller firms respectively. It is argued previously that larger firms behave differently to smaller firms in term of their demand for audit quality. The regression findings in relation to larger firms show that the log of total assets has a very significant and positive impact on audit fees while both the number of subsidiaries and the presence of at least one US-based subsidiary also exert a significant and positive impact on audit fees. As expected, the proportion of assets represented by debtors has a positive impact and the proportion of assets in the form of stock has a negative impact on audit fees. As explained earlier, it is probably the relative ease with which modern auditing technologies can undertake the auditing of stock and, therefore, this finding may be a more accurate reflection of contemporary auditing practice. The results also show that return on assets and firms experiencing loss have a significant positive impact on audit fees. It is argued that better performing companies can afford to pay for extensive audit and hence result in higher audit fee. Similarly, loss is viewed as presenting a higher risk to auditors, specifically the risk of client failure and, as a consequence, is expected to be associated with a higher audit fee. The statistics also show that audits undertaken by London-based auditors result in higher fees, a finding consistent with almost all previous UK-based research. Percentage of equity held by the block holders has a significant negative impact on the audit fees. This finding suggests that an increased external monitoring provides comfort to the external auditor and hence results in a less extensive and consequently less expensive audit. Finally, consistent with most prior research, the amount of non-audit services purchased from the auditor has a positive impact on audit fees. Similar to main regressions the independence of the board exerts a positive and significant

[27] Audit committees with at least four meetings per year as recommended by the BRC in the United States are also highly significant and positively associated with audit fees.

impact on audit fees however the number of board meetings held during the year exert a negative and significant impact on audit fees. In relation to audit committee characteristics; audit committee size, audit committee meetings and the proportion of financial experts on the audit committee has a positive and significant impact on audit fees. These findings suggest that stronger audit committees are more effective in enhancing audit quality.

The regression findings for smaller firms show that the log of total assets and both the number of subsidiaries and the presence of at least one US-based subsidiary also exert a significant and positive impact on audit fees. As expected, the proportion of assets represented by debtors also has a positive and significant impact on audit fees. The length of delay between a company's financial year-end and the date the audit report is signed off by the auditor also exerts a positive impact on audit fees. This finding is surprising in a sense that audit delay was expected to be significantly associated with audit fees for larger firms however contrary to expectations this study finds that it is significantly associated with audit fees for smaller firms. The results also show that better performing firms as represented by the return on assets have a positive and significant positive impact on audit fees. The statistics also show that audits undertaken by London-based auditors and the amount of non-audit services purchased from the auditor has a positive impact on audit fees. Similar to larger firms, the independence of the board has a positive and significant impact on audit fees however the numbers of board meetings exert a negative and significant impact on audit fees. In relation to audit committee characteristics; audit committee diligence represented by audit committee meetings and audit committee expertise represented by the proportion of financial experts on the audit committee have a positive and significant impact on audit fees. However, contrary to expectations the size of the audit committee for smaller firms has a negative and significant impact on audit fees.

The F-statistics for each model are significant at one per cent level, suggesting that the models are statistically valid. The adjusted R^2 for both models ranges between 63.6 per cent and 73.3 per cent showing that each model on this table has a high explanatory power. The total numbers of observations in each model are 496 and 495 respectively.

4.4.3 Audit Committee Characteristics and Non-Audit Fee Ratio

In line with prior research (Abbott et al., 2003b; Hoitash and Hoitash, 2009; Zaman et al., 2011), this study utilises non audit fee ratio as its proxy for auditor independence. Similar to audit committee and audit fee regressions in table 4.6, table 4.8 also contains the results of four multivariate regression models. In each regression model the dependent variable is the ratio of non-audit audit fee ratio. For each regression this study utilises time series analysis using year dummies to control for the fact that the study uses the same sample of firms in each of the four years (2007-10). In all regressions industry dummies are included to control for sector level variations. In all regressions the control variables are used to represent company size, complexity level, performance, gearing and the presence of a big 4 audit firm. Each regression model also includes the share ownership of audit committee members and a measure of audit committee busyness. In model 1 of table 4.8 this study uses the dummy variables for each of the four audit committee characteristics currently recommended as best practice for UK listed companies (UK Corporate Governance Code, 2010) while in model 2 these dummy variables are substituted with corresponding variables containing the absolute values for each of these four variables. In models 3 and 4, this study employs two variables capturing audit committee effectiveness: in model 3 a dummy variable representing those firms whose audit committees satisfy all four of the recommended characteristics (ACE1) and in model 4 dummy variable is extended to include both the presence of an accounting expert and the absence of members with excess of nine years' tenure (ACE2).

The regression results in column 1 show that the return on assets has a negative and significant impact on non-audit fee ratio. This finding is in line with the prior research (Firth 1997), suggesting that better performing firms do not need as much external consulting services as needed by the poorly performing firms. The proportion of equity held by the block holders has a positive and significant impact on non-audit fee ratio. Parkash and Venable (1993) argue that direct monitoring of external block holders results in lower auditor provided services however the finding may be highlighting the fact that external block holders do not have access to inside information and therefore rely on the quality of audited financial information to aid

their monitoring (Bushee and Noe, 2000). None of the other financial variable has any significant impact on non-audit fee ratio.

Table 4.8: OLS regressions explaining the determinants of non-audit fee ratio for FTSE 350 companies between 2007 and 2010 (***, **, * denote statistical significance at 1%, 5% and 10% respectively)

	Model 1		Model 2		Model 3		Model 4	
	Coef	T-Value	Coef	T-Value	Coef	T-Value	Coef	T-Value
Constant	1.428	1.726*	1.755	2.319**	1.301	1.768*	1.393	1.936*
Consumer Goods	.222	2.052**	.221	2.044**	.224	2.086**	.225	2.095**
General Industrial	-.044	-.459	-.047	-.488	-.042	-.441	-.051	-.533
Mineral Extraction	.281	1.798*	.288	1.859*	.290	1.867*	.292	1.875*
Utilities	.080	.462	.092	.535	.085	.492	.086	.498
2008	-.236	-2.282**	-.233	-2.265**	-.240	-2.325**	-.242	-2.347**
2009	-.301	-2.901***	-.290	-2.796***	-.308	-2.971***	-.311	-3.000***
2010	-.190	-1.828*	-.184	-1.779*	-.195	-1.884*	-.198	-1.910*
Log Total assets	-.042	-.504	-.053	-.617	-.048	-.585	-.059	-.738
Log Subs	-.094	-.837	-.083	-.745	-.094	-.841	-.094	-.837
US Subs Dummy	-.121	-1.332	-.111	-1.219	-.124	-1.367	-.119	-1.316
ROA	-.009	-2.527**	-.009	-2.479**	-.009	-2.551**	-.009	-2.607***
% Gearing	-.001	-.408	-.001	-.402	-.001	-.448	-.001	-.447
Loss	.196	1.519	.198	1.538	.198	1.539	.196	1.522
London	-.069	-.836	-.069	-.829	-.074	-.900	-.078	-.940
Big 4	.174	.798	.124	.577	.168	.779	.142	.666
% Block own	.004	1.839*	.004	1.868*	.004	1.845*	.004	1.857*
Board Ind Dummy	-.036	-.426	-.024	-.280	-.032	-.386	-.046	-.572
Board Meetings	.017	1.307	.017	1.298	.017	1.268	.016	1.241
AC % Share own	-.003	-.283	-.003	-.265	-.003	-.276	-.002	-.203
AC Ave Directorships	.158	2.341**	.195	2.833***	.152	2.274**	.151	2.238**
AC Size Dummy	-.040	-.283						
AC Meeting Dummy	-.171	-1.088						
AC Ind Dummy	-.035	-.278						
AC Fin Exp Dummy	-.027	-.068						
AC size			.007	.148				
AC Meetings			-.012	-.370				
AC % Ind			-.002	-.450				
AC % Fin Exp			-.004	-2.567***				
ACE1					-.055	-.561		
ACE2							.012	.152
F Test	2.429***		2.682***		2.725***		2.712***	
Adjusted R^2	.035		.041		.037		.037	
N	948		948		948		948	

Definitions of variables

Dependent variable: non-audit to audit fee ratio

Independent variables: Log Total Assets = the natural logarithm of total assets; Log Subs = the natural logarithm of total consolidated subsidiaries; US Subs dummy = dummy variable indicating US subsidiaries; Debtors = percentage of total assets represented by debtors; % Stock = percentage of total assets represented by stock; Log Delay = the natural logarithm of audit delay; ROA = return on assets; % Gearing = percentage of total long-term finance represented by long term debt; Loss = dummy variable representing the firm incurring loss in last two years; London = dummy variable representing firms audited by a London based auditor; Big4 = dummy variable indicating instances where the audit was carried out by a Big4 audit firm; % Block Own = percentage of equity owned by the block holders; % Log Non Audit Fee = the natural logarithm of non audit fee; Board Ind dummy = dummy variable indicating instances where boards comprised of majority independent directors; Board meetings = the number of meetings held by the board during the year; AC % Share own = percentage of equity held by audit committee members; AC Ave Directorships = average directorships held by the audit committee members; AC Size dummy = dummy variable indicating instances where the audit committee contains three or more members; AC Meetings dummy = dummy variable indicating instances where the audit committee held at least three meetings; AC Ind dummy = dummy variable indicating instances where the audit committee had solely independent non-executive directors; AC Fin Exp dummy = dummy variable indicating instances where the audit committees had financial expertise; AC Size = number of audit committee members; AC Meetings = Number of audit committee meetings held during the year; AC % Ind = Percentage of audit committee members who are independent non-executive directors; AC % Fin Exp = Percentage of audit committee members who are financial experts; ACE1 = dummy variable representing instances where audit committees comprise at least three members, contained at least one financial expert, all members being independent and met at least three times during the financial year; ACE2 = dummy variable representing instances where audit committees comprise at least three members, contained at least one financial expert, all members being independent and met at least three times during the financial year, contains one accounting expert and has no member with more than 9 years tenure.

The independence of the board and the board meetings has also shown no significant impact on non-audit fee ratio. From the audit committee variables, average directorships held by the audit committee members have a positive and significant impact on non-audit fee ratio. This finding suggests audit committee members' additional directorships result in busy and overstretched directors who are unable to pay adequate attention to external audit issues. None of the other audit committee variable has any significant impact on non-audit fee ratio however the negative

correlation among the fundamental audit committee variable (i.e. size, independence, meetings and financial expertise) and non-audit fee ratio suggest that such characteristics are supportive of enhanced auditor independence.

In model 2 dummy variables are substituted with corresponding continuous variables containing the absolute values for each of these four variables. The proportion of financial experts on the audit committee has a negative and significant impact on non-audit fee ratio suggesting a strong support of members with financial expertise on issues relating to auditor independence. Zaman *et al.* (2011), while examining firms in the year 2001 to 2004, have also found financial expertise having a negative impact on non-audit fees. Prior studies have also found that audit committee members tend to support auditors in the adjustment recommendations if they have more experience and knowledge of auditing (Dezoort and Salterio, 2001). Chen and Zhou (2007) also found that audit committee independence and the audit committee's financial expertise played a role in firms choosing to dismiss Arthur Andersen more quickly, than firms whose audit committee did not have these characteristics. Other than financial expertise, audit committee average directorships have a positive and significant impact on non-audit fee ratio supporting the busyness hypothesis that argues that overstretched directors are not very good monitors of the financial reporting quality. This finding is also consistent with the argument that holding of additional directorships result in a conflict of interest and such directors focus more on their own interests than on stakeholder interests (Fich and Shivdasani, 2006).

In model 3 and 4 of table 4.8 the impact of the composite dummies representing those firms adhering to all four recommendations of best practice (ACE1) and those that comply with best practice as in ACE1 but, in addition, have no member with longer than nine years' tenure and also has at least one accounting expert (ACE2) on non-audit fee ratio is statistically insignificant[28]. The insignificance of the audit committee effectiveness constructs is somewhat surprising as the prior evidence for the impact of audit committee effectiveness on auditor independence shows that audit committee

[28] Two alternative effectiveness variables ACE3 and ACE4 representing the aggregate count of each of these elements of compliance from ACE1 and ACE2 also have no significant impact on non-audit fee ratio.

effectiveness has a negative and significant impact on non-audit fee ratio and hence result in higher auditor independence (Abbott *et al.,* 2003b). However Zaman *et al.,* (2011) while measuring auditor independence using non-audit fee documented a significant positive association between audit committee effectiveness and non-audit fees.

The F-statistics of each model are significant at one per cent level, suggesting that the models are statistically valid. The adjusted R^2 for all models ranges between 3.5 per cent and 4.1 per cent. The low value of adjusted R^2 is consistent with the prior studies in this area. Hoitash and Hoitash (2009) and Mitra and Hossain (2007) have documented low R^2 values, 5.2 per cent and 12.1 per cent respectively. The total number of observations in each model are 948.

4.4.4 Tests of Robustness

Similar to the audit fee regression models this study re-runs the main regressions of the non audit fee ratio model and examines whether the clustering within firms may have biased the estimated standard errors which may have affected, to some extent, the significant levels found for the estimated coefficients. These tests show that the findings reported in the main regression analysis specifically in relation to audit committee busyness and audit committee financial expertise hold strong and are not sensitive to this approach. A number of other robustness tests were also conducted which are discussed below.

Table 4.9 provides a detailed analysis of audit committee financial expertise, audit committee busyness audit committee tenure variables. In model 1, the proportion of audit committee members with accounting expertise[29] and in model 2 the proportion of members with non-accounting expertise reveal a statistical insignificant impact of these expertise variations on non-audit fee ratio. The variable representing the proportion of audit committee members with governance expertise is also not significant (un-tabulated). In models 3 and 4 this study substitutes the audit committee average directorships with variables representing the extent of holding other directorships by audit committee members. The results show that the holding of one or more additional directorships has no significant impact on non-audit fee ratio however two or more additional directorships in model 4 have a positive and significant impact on non-audit fee ratios at one per cent level. The holding of three or more additional directorships also has a positive and significant impact on non-audit fee ratios at one per cent level (un-tabulated). These findings again highlight the negative impact of additional directorships on audit quality and show that as the busyness of directors increases the degree of negative impact on auditor independence increases as well. Consistent with busyness hypothesis this finding suggests that directors holding other directorships may be too busy to do their job effectively and hence have a negative impact on the firms' audit quality.

[29] The dummy variable representing audit committees with at least one accounting expert also has no impact on non-audit fees.

Regression models 5 and 6 represent an alternative measure of audit committee independence. In model 5 the variable representing the proportion of audit committee members with nine or over nine year tenure also has a significant negative impact on non-audit fee ratio. In Model 6 the variable representing the proportion of members with six or over six year of tenure also have a negative and significant impact on non-audit fee ratio. The significance level in both these models is five per cent respectively. Taken together these findings suggest that audit committee members serving longer on the boards do not prefer to purchase high amount of non-audit services from the incumbent auditor. Kosnik (1990) and Beasley (1996) argue that accumulated knowledge and experience by serving longer on the board result in more effective directors. The new audit committee size and meetings variables representing audit committees comprised of at least four members and audit committees that meet at least five times every year have shown no significant impact on non-audit fee ratio (un-tabulated).

Table 4.9: OLS regressions explaining the determinants of non-audit fee ratio for FTSE 350 companies between 2007 and 2010 (***, **, * denote statistical significance at 1%, 5% and 10% respectively)

	AC Expertise Variations				AC Busyness Variations				AC Tenure Variations			
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Coef	T-Value	Coef	T-Value	Coef	T-Value	Coef	T-Value	Coef	T-Value	Coef	T-Value
Constant	1.559	2.123**	1.407	1.948*	1.305	1.572	1.403	1.702*	1.575	1.909*	1.562	1.891*
Log Total assets	-.049	-.585	-.037	-.444	-.027	-.323	-.038	-.461	-.050	-.609	-.044	-.534
Log Subs	-.093	-.834	-.089	-.800	-.110	-.981	-.092	-.822	-.106	-.951	-.098	-.879
US Subs Dummy	-.123	-1.352	-.115	-1.257	-.114	-1.244	-.116	-1.281	-.112	-1.233	-.112	-1.241
ROA	-.009	-2.585**	-.009	-2.434**	-.010	-2.588**	-.009	-2.395**	-.009	-2.578**	-.009	-2.558**
% Gearing	-.001	-.493	-.001	-.301	-.001	-.457	-.001	-.402	-.002	-.546	-.001	-.463
Loss	.202	1.571	.188	1.463	.202	1.564	.183	1.418	.182	1.414	.188	1.462
London	-.068	-.822	-.067	-.814	-.065	-.790	-.077	-.933	-.076	-.922	-.075	-.913
Big 4	.167	.766	.168	.771	.222	1.010	.174	.802	.176	.821	.188	.875
% Block own	.004	1.850*	.004	1.867*	.004	1.841*	.004	1.848*	.004	1.854*	.004	1.771*
Board Ind Dummy	-.037	-.439	-.028	-.329	-.046	-.534	-.033	-.388	-.049	-.607	-.051	-.622
Board Meetings	.018	1.341	.016	1.261	.018	1.406	.018	1.355	.015	1.139	.015	1.150
AC % Share own	-.004	-.355	-.002	-.163	-.004	-.329	-.004	-.344	.004	.374	.000	.008
AC Ave Directorships	.177	2.561**	.158	2.355**					.131	1.920*	.144	2.139**
AC Size Dummy	-.071	-.506	-.021	-.148	-.052	-.368	-.041	-.291	-.030	-.216	-.038	-.277
AC Meetings Dummy	-.163	-1.038	-.173	-1.099	-.150	-.952	-.181	-1.150	-.200	-1.276	-.193	-1.232
AC Ind Dummy	-.041	-.327	-.032	-.261	-.031	-.248	-.028	-.225				
AC Fin Exp Dummy					.003	.008	-.018	-.048	-.006	-.015	-.048	-.125
AC % Acc Exp	-.002	-1.188										
AC % Non Acc Exp			-.002	-1.381								
AC % Addir1plus					.001	.474						
AC % Addir2plus							.005	3.005***				
AC % Tenure 9									-.006	-2.423**		
AC % Tenure 6											-.003	-2.102**
Industry Dummies	Included		Included		Included		Included		Included		Included	
Year Dummies	Included		Included		Included		Included		Included		Included	
F Test	2.491***		2.514***		2.198***		2.585***		2.686		2.621***	
Adjusted R^2	.036		.037		.029		.039		.041		.039	
N	948		948		948		948		948		948	

Definitions of variables

Dependent variable: non-audit to audit fee ratio

Independent variables: Log Total Assets = the natural logarithm of total assets; Log Subs = the natural logarithm of total consolidated subsidiaries; US Subs dummy = dummy variable indicating US subsidiaries; Debtors = percentage of total assets represented by debtors; % Stock = percentage of total assets represented by stock; Log Delay = the natural logarithm of audit delay; ROA = return on assets; % Gearing = percentage of total long-term finance represented by long term debt; Loss = dummy variable representing the firm incurring loss in last two years; London = dummy variable representing firms audited by a London based auditor; Big4 = dummy variable indicating instances where the audit was carried out by a Big4 audit firm; % Block Own = percentage of equity owned by the block holders; % Log Non Audit Fee = the natural logarithm of non audit fee; Board Ind dummy = dummy variable indicating instances where boards comprised of majority independent directors; Board meetings = the number of meetings held by the board during the year; AC % Share own = percentage of equity held by audit committee members; AC Ave Directorships = average directorships held by the audit committee members; AC Size dummy = dummy variable indicating instances where the audit committee contains three or more members; AC Meetings dummy = dummy variable indicating instances where the audit committee held at least three meetings; AC Ind dummy = dummy variable indicating instances where the audit committee had solely independent non-executive directors; AC Fin Exp dummy = dummy variable indicating instances where the audit committees had financial expertise; AC % Acc Exp = Percentage of audit committee members who are accounting experts; AC % Non Acc Exp = percentage of audit committee members who are non-accounting experts; AC % Addir1plus = percentage of audit committee members with at least one additional directorship; AC % Addir2plus = percentage of audit committee members with at least two additional directorships; AC % Tenure 9 = percentage of audit committee members who have served on company board for more than 9 years; AC % Tenure 6 = percentage of audit committee members who have served on company board for more than 6 years.

The impact of the remaining variables in each regression is broadly consistent in each of the regression on table 4.9. Return on assets has a negative and significant impact on non-audit fee ratio. The proportion of equity held by the block holders has a positive and significant impact on non-audit fee ratio. This finding may be highlighting the fact that external block holders do not have access to inside information and therefore rely on the quality of audited financial information to aid their monitoring (Bushee and Noe, 2000). None of the other financial variable has any significant impact on non-audit fee ratio. The independence of the board and the board meetings has also shown no impact on non-audit fee ratio. The average directorships held by the audit committee members have a positive and significant impact on non-audit fee ratio. This finding suggests audit committee members directorships result in busy and overstretched directors who are unable to pay adequate attention to external audit issues. The F-statistics for all models are significant at one per cent level. The adjusted R^2 for all models ranges between 2.9 per cent and 4.2 per cent. The low value of adjusted R^2 is consistent with the prior studies in this area. Hoitash and Hoitash (2009) and Mitra and Hossain (2007) have documented low R^2 values, 5.2 per cent and 12.1 per cent respectively. The total number of observations in each model are 948.

The study runs separate regressions for larger and smaller firms and Appendix B represents larger and smaller firms respectively. Appendix B also contains a Logistic regression analysis model where this study uses a binary variable as its dependent variable (=1 if non audit fee is higher than audit fee; =0 otherwise) to represent auditor independence. The proportion of equity held by the block holders has a positive and significant impact on non-audit fee ratio. This finding may be highlighting the fact that external block holders rely on the quality of audited financial information to aid their monitoring (Bushee and Noe, 2000). As expected, audit committee independence as represented by the proportion of independent members on the audit committee has negative and significant impact on non-audit fee ratio. This finding is in line with prior research and highlights the fact that independence of the audit committee members is crucial in maintaining auditor independence. Abbott et al., (2003b), while investigating a sample of 538 US firms, has also documented that audit committee independence has a negative and significant impact on non-audit fee ratio. The proportion of audit committee members with financial expertise also has a negative and significant impact on non-audit fee ratio highlighting the support of audit committee members with financial expertise for auditor independence. Prior studies have also found that audit committee members tend to support auditors in the adjustment recommendations if they have more experience and knowledge of auditing (Dezoort and Salterio, 2001). The regression findings for smaller firms show that the firm size represented by the log of total assets has a positive and significant impact on non-audit fee ratio. Consistent with the prior research, larger firms tend to purchase higher amount of non audit services owing to their enormous size and complex activities (Palmrose, 1986; Barkess and Simnett, 1994). None of the other financial and governance variables including audit committee variables has any significant impact on non-audit fee ratio.

Finally in logistic regression model this study replaces the dependent variable from non-audit fee ratio to non-audit fee binary variable. This variable equals '1' if non audit fee of the firm paid to the auditor is greater than audit fee and equals '0' otherwise. The log of subsidiaries has a negative and significant impact on non-audit fee dummy variable. This finding is counter intuitive however consistent with the prior UK based evidence (Zaman et al., 2011). The return on assets has a negative and significant

impact on non-audit fee variable. This finding shows that better performing firms tend to purchase low non-audit fees compared to their counterparts (Abbott *et al.,* 2003b). Firms experiencing losses has a positive and significant impact on non-audit fee dummy variable. This finding suggest that poorly performing firm is more likely to ask for higher external consulting services to improve their profitability (DeFond *et al.,* 2002; Whisenant *et al.,* 2003). As expected, Big 4 auditor also has a positive and significant impact on non-audit fee dummy variable. Abbott *et al.,* (2003b) state that big auditing firms offer a wide variety of consulting services and have expanded into consulting services at a much faster rate than expected. From the board governance variables, number of board meetings has a positive and significant impact on non-audit fee dummy variable. Although the significant impact of board meeting is in the direction opposite to prediction, this finding is in line with the prior UK evidence. Zaman *et al.,* (2011) has also documented a positive and significant impact of board meeting on non-audit services fees. Audit committee average directorships have a positive and significant impact on non-audit fee dummy variable. This finding is also consistent with the argument that holding of additional directorships result in a conflict of interest if directors accept too many directorships and focus more on their own interests than on stakeholder interests (Fich and Shivdasani, 2006). The proportion of audit committee members with financial expertise also has a negative and significant impact on non-audit fee dummy variable. This finding highlights the importance of such expertise in maintaining auditor independence. Chen and Zhou (2007) also found that audit committee's financial expertise also played a role in firms choosing to dismiss Arthur Andersen more quickly, than firms whose audit committee did not have these characteristics. In summary the findings from the logistic regression indicate that firms paying higher non audit services fees compared to audit fee are those with busy audit committee members, more board meetings, experiencing losses, audited by Big4 while firms paying less non audit services fees compared to audit fee are those with more financial experts on audit committees, higher return on assets and higher complexity.

The F-statistics for each model are significant at one per cent level, suggesting that the models are statistically valid. The adjusted R^2 for all models ranges between 2 per cent

and 7.6 per cent. The low value of adjusted R^2 is consistent with the prior studies in this area. Hoitash and Hoitash (2009) and Mitra and Hossain (2007) have documented low R^2 values, 5.2 per cent and 12.1 per cent respectively. The number of observations in each of these regression models were 481, 467 and 948 respectively.

Table 4.10: Summary of Hypotheses – Audit Quality

Hypotheses	***Findings***
H1: The number of audit committee members are positively associated with audit quality.	*Not Supported*
H3: The proportion of audit committee members with financial expertise are positively associated with audit quality;	*Supported*
H5: The proportion of independent audit committee members are positively associated with audit quality;	*Not Supported*
H7: The frequency of audit committee meetings is positively associated with audit quality;	*Supported*
H9: The proportion of audit committee members with longer tenure is negatively associated with audit quality;	*Not Supported*
H11: The proportion of equity held by audit committee members is positively associated with audit quality.	*Not Supported*
H13: The busyness of the audit committee members is negatively associated with audit quality;	*Supported*
H15: The presence of an effective audit committee is positively associated with audit quality;	*Not Supported*

4.5 Summary

This chapter investigates the impact of various audit committee characteristics on audit quality which is represented by both audit fee and non-audit fee ratios. It begins by presenting the descriptive statistics for the pooled sample, followed by an explanation of the descriptive statistics on a year and industry level. This analysis reveals a continuous increase and a large scale adherence to various UK Corporate Governance Code requirements in relation to audit committee size, independence, meetings and expertise level. The chapter then presents the results of the Univariate analysis; in particular it outlines the differences in means and mean ranks of those companies that are larger in size as compared to those that are smaller in size. The univariate statistics show that on average larger firms pay significantly higher audit fees and non-audit service fees as compared to smaller firms. These findings suggest that larger companies are more complex and difficult to audit and hence require more audit effort and consequently result in higher audit fees. Larger firms are also better resourced and can afford to pay for more audit coverage as compared to their smaller counterparts. The mean value of non-audit fee ratio is significantly lower in large firms as compared to small firms. The analysis also highlights that on average audit committee size, number of meetings and percentage independence is significantly higher in those firms that are larger in size as compared to those that are smaller in size. Similarly the mean and mean rank values of companies that have full compliance with the UK Corporate Governance Code (2010) in relation to audit committee size, meetings and independence is significantly higher for larger companies than those that are small in size.

Following the Univariate analysis, the chapter then goes on to show the bivariate correlations among the different variables used in this study. In respect of the audit committee characteristics, a number of variables show significant and positive correlations with audit fees. For example, audit committee size, the annual frequency of meetings, and the level of independent membership are positively correlated with audit fees suggesting, at the univariate level at least, that larger, more diligent, and more independent audit committees are associated with more expensive audits. There is also a positive association between both the proportion of financial experts and

audit fees suggesting that greater expertise on the committee may result in more intensive and more expensive audits. Audit committee non-accounting expertise is significant and positively correlated with audit fees, however there is significant and negative correlation among accounting expertise and audit fees. This is consistent with Krishnan and Visvanathan (2009) who argue that accounting experts provide greater monitoring and hence result in lower audit fees charged by the auditor. Finally, all four of the proxies for audit committee effectiveness are significant and positively correlated with audit fees but the significance of both ACE1 and ACE3, representing compliance with the four core components of present audit committee regulation, is especially pronounced.

Finally, the multivariate regression results are presented in order to explain the impact of various audit committee characteristics on audit quality, represented by audit fees and non-audit fee ratio. In summary, the empirical findings reported in the audit fee analysis find that the key ingredients of what regulators perceive as more effective audit committees i.e. meetings and expertise, are associated with more extensive and expensive audits. These findings are interesting in that they identify consistent impact of good governance practice on audit fees and should serve as reassurance to regulators who may interpret these findings as supportive of their recommendations, at least if interpreted as more expensive audits equals more intensive audit. In the provision of non-audit services fee, audit committees have the responsibility to ensure that provision of such services does not impair the independence and objectivity of the external auditor (Smith Report, 2003). The analyses in relation to audit committees and auditor independence shows that audit committee members' financial expertise has a negative and significant impact on non-audit fee ratio suggesting a strong support of members with financial expertise on issues relating to auditor independence. The study also documents that audit committee members serving longer on the boards do not prefer to purchase high amounts of non-audit services from the incumbent auditor. Kosnik (1990) and Beasley (1996) argue that accumulated knowledge and experience by serving longer on the board results in more effective directors. Audit committees' average directorships have a positive and significant

impact on non-audit fee ratio supporting the busyness hypothesis that argues that overstretched directors are not very good monitors of the financial reporting quality.

CHAPTER 5: AUDIT COMMITTEE CHARACTERISTICS AND EARNINGS QUALITY – EMPIRICAL ANALYSIS

5.0 Introduction

This chapter begins by outlining the descriptive statistics and univariate analysis of the variables used in the second empirical analysis to investigate the influence of audit committee characteristics on earnings quality. The descriptive analysis includes; a comprehensive analysis of the pooled sample, a detailed analysis based on four corresponding years and finally a detailed examination of the various industries used in this study. The chapter then presents the results of the univariate analysis. The univariate analysis contains statistics from independent t-test and Mann-Whittney test highlighting the significant differences in the mean and mean rank values of various audit committee variables for firms that are large in size compared to firms that are small in size. This is followed by a correlation matrix showing a two way Pearson correlation between the variables included in this study. Correlations statistics are not only important as they highlight the associations between earnings quality measures employed in this study and the explanatory variables but also identify the significant correlations among the independent variables. The chapter then presents the results of a detailed multivariate regression analysis that investigates the hypotheses set out in chapter three. The multivariate analysis includes a robust investigation of the impact of various audit committee characteristics on earnings quality based on pooled sample dataset as well as a separate regression for larger and smaller firms. The study utilises McNichols (2002) and Francis et al., (2005) models to measure earnings quality. Finally, this chapter ends by summarizing the results of the second empirical analysis.

5.1 Descriptive Statistics

Table 5.1 contains descriptive statistics for all of the variables used in the second empirical analysis. These descriptive statistics are based on 691 firm year observations, which is a much reduced sample size as compared to first empirical analysis where the sample size equals 991 observations. In line with the prior literature in this area (Peasnell *et al.* 2005; Ghosh, 2010), to provide an unbiased measure of accrual quality

this study excludes industries with less than 10 observations in any given year. This reduced the pooled sample size to 691. The first two variables represent the two accruals based models used in this study where McNichols (2002) model signifies the intentional and unintentional errors in the accruals estimation and Francis (2005) model represents the intentional/discretionary manipulation of accrual as this model has the ability to disaggregates the intentional manipulation of accruals from its unintentional part. The mean (median) values of McNichols and Francis are .049 (.036) and .045 (.033) respectively illustrating a very minute difference between the two models. These results suggest that a majority of accruals estimation errors are linked to intentional or discretionary part of accruals estimation equation. These values are also consistent with the recent US based studies of Ghosh *et al.* (2010) and Doyle *et al.* (2007) where they documented the mean values as .052 and .070 respectively.

As discussed in the previous section, this study captures the fine detail in terms of audit committee characteristics. Audit committees in this sample have, on average, 3.36 members with a median of 3 members. The range of audit committee size ranges from a minimum of 2 to a maximum of 8 members. 89 per cent of sample companies have audit committees with 3 or more members as recommended as best practice by the UK Corporate Governance Code (2010). Audit committees in the sample meet, on average, 3.90 times per year with a median of 4 meetings. The number of meetings range from a minimum of 1 to a maximum of 12. 93.3 per cent of audit committees meet three or more times during the year as recommended in the UK Corporate Governance Code (2010). On average, 94.71 per cent of audit committee members are independent non-executives while 84.7 per cent of audit committees comprise only independent members as recommended by current best practice. In terms of the additional proxy for independence, the mean presence of members with more than nine years' tenure is only 7.91 per cent. However the mean presence of members with more than six year tenure is 23.47 per cent. The UK Corporate Governance Code (1010) requires non-executive directors not to serve more than nine years on a company's board as it can become detrimental to their independence and also requires companies to a have a rigorous review of non-executives serving longer than six years. The descriptive statistics in table 5.1 also show that, on average, 78.82 per cent of

audit committee members are financial experts. The average proportion of audit committee members who are accounting experts is 35.72 per cent and 43.10 per cent of audit committee members are non-accounting experts. The study also finds that the average proportion of governance experts (i.e. audit committee member with other audit committee experience) on audit committees is 24.14 per cent.

In addition to audit committee characteristics recommended by governance regulation this study also captures the ownership of audit committee members since there is a strong argument, as well as some supporting evidence, that audit committee members with an equity stake in their companies may be more effective in their oversight of the financial reporting process. As expected, the summary statistics presented in table 5.1 show that the ownership levels of the average audit committee is quite low at 0.314 per cent with an even lower median of only .016 per cent. While examining the multiple directorships, the findings show that the average additional directorship held by audit committees in the sample is .713 with a median of .667 with a range from 0 to a maximum of 4 directorships. The study also constructs variables representing the proportion of audit committee members with one or more, two or more or three or more additional directorships with mean values for these variables of 45 per cent, 18 per cent and 6.62 per cent respectively.

As discussed in the previous sections, this study uses a composite variable to identify audit committees that conform to all of the minimum recommendations in terms of size, independence, meeting frequency and expertise (ACE1). 71.3 per cent of audit committees in the sample satisfy all four of the recommended characteristics. Furthermore, I also use a variable where I aggregate up each company's degree of compliance (ACE3). The average audit committee in the sample scores 3.66 points out of a maximum of 4. When the composite variables are extended to include the presence of an accounting expert and the absence of members with excess of nine years' tenure (ACE2), the proportion of companies in compliance reduces to 53.2 per cent with the mean score of compliance (ACE4) at 5.33 out of a maximum 6.

For board of director variables, the study finds that 55.7 per cent of FTSE 350 boards are comprised of a majority of independent directors as required by the UK Corporate Governance Code (2010). The independence level of corporate boards in the UK has shown some improvement as O'Sullivan (2000) reports this percentage to be at 41.17 per cent. O'Sullivan (2000) utilises the proportion of non-executives to quantify board independence. This study utilizes governance disclosures subsequent to Higgs (2003) and now it is possible to identify independent non-executives rather than just non-executives as used in O'Sullivan (2000).The average frequency of board meetings is 8.88 meetings per year with a median of 8 meetings and a range of 1 to 26 meetings during the year.

Table 5.1: Descriptive Statistics

Variables	Mean	Median	Std. Deviation	Minimum	Maximum	Skewness	Kurtosis
Francis	0.045	0.033	0.043	0.000	0.275	1.786	4.078
McNichols	0.049	0.036	0.046	0.000	0.303	1.704	3.794
AC Size	3.366	3.000	0.863	2.000	8.000	1.062	2.534
AC Size Dummy	0.893	1.000	0.309	0.000	1.000	-2.547	4.499
AC Meetings	3.904	4.000	1.257	1.000	12.000	1.438	4.477
AC Meetings Dummy	0.933	1.000	0.249	0.000	1.000	-3.485	10.175
AC % Ind	94.714	100.000	13.244	25.000	100.000	-2.588	6.636
AC Ind Dummy	0.847	1.000	0.361	0.000	1.000	-1.928	1.721
AC % Tenure 9	7.915	0.000	17.476	0.000	100.000	2.516	6.857
AC % Tenure 6	23.479	25.000	26.594	0.000	100.000	0.929	0.155
AC % Fin Exp	78.828	75.000	23.500	0.000	100.000	-0.860	0.008
AC Fin Exp Dummy	0.991	1.000	0.093	0.000	1.000	-10.614	110.986
AC % Acc Exp	35.724	33.333	21.753	0.000	100.000	0.408	0.393
AC % Non Acc Exp	43.104	42.857	25.548	0.000	100.000	0.035	-0.323
AC % Gov Exp	24.140	25.000	25.038	0.000	100.000	0.810	0.085
AC Ave Directorships	0.713	0.667	0.575	0.000	4.000	1.114	2.120
AC % Addirs1plus	45.059	50.000	29.347	0.000	100.000	0.134	-0.720
AC % Addirs2plus	18.415	0.000	23.018	0.000	150.000	1.362	2.396
AC % Addirs3plus	6.624	0.000	14.780	0.000	100.000	2.353	5.686
AC % Share own	0.314	0.016	2.873	0.000	39.168	12.630	161.298
ACE1	0.713	1.000	0.452	0.000	1.000	-0.946	-1.108
ACE2	0.518	1.000	0.500	0.000	1.000	-0.073	-2.001

Variables	Mean	Median	Std. Deviation	Minimum	Maximum	Skewness	Kurtosis
ACE3	3.664	4.000	0.572	1.000	4.000	-1.597	2.017
ACE4	5.302	6.000	0.876	2.000	6.000	-1.238	1.077
Board Ind Dummy	0.557	1.000	0.497	0.000	1.000	-0.231	-1.952
Board Meetings	8.887	8.000	3.060	1.000	26.000	1.480	4.536
Big4	0.951	1.000	0.216	0.000	1.000	-4.177	15.496
Audit Delay	64.546	62.000	16.780	25.000	149.000	1.205	3.010
Log Delay	1.796	1.792	0.108	1.398	2.173	0.046	1.163
Total Asset (£000s)	3115682	874756	6729681	32794	55967340	4.456226	22.2
Log Total Assets	9.004	8.942	0.629	7.516	10.748	0.379	-0.351
% Gearing	22.412	20.060	17.328	0.000	92.246	0.595	-0.063
ROA	11.545	9.526	13.613	-47.500	130.311	2.731	18.248
CFO	13.896	11.875	11.010	-12.234	127.327	3.212	22.886
Loss	0.122	0.000	0.327	0.000	1.000	2.321	3.398
% Block own	39.679	39.250	18.141	0.000	92.400	0.205	-0.234

95.1 per cent of companies in the sample use one of the big 4 audit firms. This is not a surprise but illustrates the extremely high level of concentration prevalent in the UK audit market and goes some way to explaining current concerns surrounding the lack of choice in this market segment currently being discussed at EU level (European Commission, 2011). The average company size based on total assets is £3115 million and audit delay is averaging at 64.54 days. The average level of gearing for sample companies is 22.41 per cent; the average level of return on assets is 11.54 per cent; and the average level of CFO is 13.89 per cent. 12.2 per cent of companies declared loss in last two years and 39.67 per cent of the equity is held by the block holders.

5.1.1 Descriptive Statistics – Year wise

Table 5.2 contains descriptive statistics on yearly basis. The yearly analysis of accruals shows that as per McNichols model the mean (median) value of absolute accruals has decreased from 5.5 (4.2) per cent of total assets in 2007 to 4.3 (2.9) per cent of total assets in 2010. Similarly the mean and median values of discretionary accruals as per Francis model have decreased from 5.5 (3.9) per cent of total assets in 2007 to 3.9 (2.6) per cent of total assets in 2010. The study also reveals a continuous increase and a large scale adherence to various UK Corporate Governance Code requirements in relation to audit committee size, independence, meetings and expertise level. From 2007 to 2010, audit committees average size has increased from 3.33 members to 3.44 members with audit committees fulfilling the size requirement of a minimum of three members have increased from 85.4 per cent to 94.8 per cent. The average number of audit committee meetings has increased from 3.80 meetings per year to 3.94 meetings per year and audit committees meeting at least three or more times have increased from 91.8 per cent to 93.6 per cent. The proportion of independent audit committees members have increased from 93.39 per cent to 94.83 per cent and audit committees comprised of all independent directors have increased from 80.7 per cent to 85 per cent. Audit committee members with nine or over nine year tenure have slightly reduced from 8.72 per cent to 6.94 per cent and proportion of members with six or over six year tenure remained largely the same in the four year period from 2007 to 2010. The proportion of members with financial expertise has increased from 76 per cent to 79 per cent and a similar 3 per cent increase has also been recorded for the

audit committee members with accounting expertise. Percentage of audit committee members with governance expertise have increased from 21.07 per cent to 25.25 per cent during the sample period. The mean value of average additional directorships held by the audit committee members have increased from .696 to .708 and the proportion of members with additional directorships has also shown a small increases in the sample time period. Audit committees complying with all four aspects of recommended best practice (i.e. ACE1) have increased from 66.1 per cent to 75.7 per cent with the mean score of compliance going up from 3.56 to 3.72 out of 4 (i.e. ACE3). Similarly when the composite variable includes both the presence of an accounting qualified person and the absence of members with excess of nine years' tenure (i.e. ACE2), the proportion of companies in compliance increased from 46.8 per cent to 56.1 per cent and mean score of compliance (i.e. ACE4) has gone up from 5.19 to 5.38 out of a maximum 6.

Other than audit committee characteristics, board independence has increased from 49 per cent to 63 per cent and the average number of board meetings held during the year remains steady at 8 to 9 meetings per year. Of the other earnings quality determinants audits conducted by big 4 auditors have increased from 94.1 per cent to 96 per cent; average audit delay has decreased from 65.56 to 63.94 days; the mean value of total assets has increased considerably from £2534 million to £3549 million; average gearing has dropped marginally from 28.43 per cent to 26.49 per cent; ROA and CFO have decreased from 15.04 per cent to 10.77 per cent and 14.69 per cent to 13.40 per cent respectively; the number of companies declaring loss in the last two years have increased from 8.2 per cent to 17.3 per cent; and the percentage of equity held by the block holders have remain steady at 40 per cent in the four year period from 2007 to 2010.

Table 5.2: Descriptive Statistics - year wise

Variables	2007		2008		2009		2010	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Francisdaq	0.055	0.039	0.046	0.036	0.040	0.031	0.039	0.026
McNichols	0.055	0.042	0.052	0.039	0.046	0.038	0.043	0.029
AC Size	3.333	3.000	3.312	3.000	3.379	3.000	3.439	3.000
AC Size Dummy	0.854	1.000	0.867	1.000	0.902	1.000	0.948	1.000
AC meetings	3.795	4.000	3.919	4.000	3.966	4.000	3.936	4.000
AC meetings Dummy	0.918	1.000	0.936	1.000	0.943	1.000	0.936	1.000
AC % Ind	93.392	100.00	95.707	100.00	94.914	100.00	94.827	100.00
AC Ind Dummy	0.807	1.000	0.879	1.000	0.851	1.000	0.850	1.000
AC % Tenure 9	8.723	0.000	8.179	0.000	7.822	0.000	6.946	0.000
AC % Tenure 6	24.094	0.000	22.697	0.000	22.967	25.000	24.169	25.000
AC % Fin Exp	76.428	75.000	79.002	75.000	80.374	91.667	79.470	80.000
AC Fin Exp Dummy	0.988	1.000	0.994	1.000	0.994	1.000	0.988	1.000
AC % Acc Exp	33.635	33.333	35.845	33.333	36.917	33.333	36.466	33.333
AC % Non Acc Exp	42.792	40.000	43.157	50.000	43.456	50.000	43.004	33.333
AC % Gov Exp	21.067	20.000	24.784	25.000	25.417	25.000	25.250	25.000
AC Ave Directorships	0.696	0.667	0.704	0.667	0.743	0.667	0.708	0.667
AC % Addirs1plus	44.727	40.000	45.827	50.000	45.190	50.000	44.487	33.333
AC % Addirs2plus	17.778	0.000	17.585	0.000	19.856	20.000	18.426	0.000
AC % Addirs3plus	5.721	0.000	6.360	0.000	7.299	0.000	7.100	0.000
AC % Share own	0.303	0.016	0.318	0.015	0.300	0.015	0.335	0.016
ACE1	0.661	1.000	0.711	1.000	0.724	1.000	0.757	1.000
ACE2	0.468	0.000	0.520	1.000	0.523	1.000	0.561	1.000
ACE3	3.567	4.000	3.676	4.000	3.690	4.000	3.723	4.000
ACE4	5.193	5.000	5.306	6.000	5.328	6.000	5.382	6.000
Board Ind Dummy	0.491	0.000	0.520	1.000	0.586	1.000	0.630	1.000
Board Meetings	8.591	8.000	9.225	9.000	8.983	9.000	8.746	8.000

Variables	2007		2008		2009		2010	
	Mean	**Median**	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
Big4	0.947	1.000	0.948	1.000	0.948	1.000	0.960	1.000
Audit Delay	65.561	63.000	64.555	62.000	64.132	62.000	63.948	61.000
Log Delay	1.803	1.799	1.797	1.792	1.794	1.792	1.792	1.785
Tot Assets (000)	2534219	691400	3061293	926900	3309560	883005	3549813	964183
Log Total Assets	8.933	8.840	9.013	8.967	9.024	8.946	9.046	8.984
% Gearing	28.434	26.247	29.397	26.673	29.327	27.780	26.486	24.164
ROA	15.038	11.727	12.346	10.732	8.086	7.063	10.769	8.613
CFO	14.693	11.913	14.624	12.256	12.885	11.341	13.396	12.293
Loss	0.082	0.000	0.116	0.000	0.115	0.000	0.173	0.000
% Block own	40.425	38.700	39.559	40.450	37.878	37.300	40.874	40.935

5.1.2 Descriptive Statistics – Industry wise

Table 5.3 contains descriptive statistics of all eleven industries utilised in the second empirical analysis. The results show that industrial engineering, food and beverages and electrical and electronic sectors have relatively lower mean values of absolute accruals and absolute discretionary accruals as compared to their counterparts especially the oil and gas sector and travel and leisure sector. In terms of audit committee size the mean value is over three for all the industries however adherence to recommended best practice (e.g. having at least three members) is highest in the mining sector and lowest in the food and beverages sector with average audit committees' compliance level standing at 97.7 per cent and 75.8 per cent respectively. The average number of audit committee meetings is over 3 meetings for all the industries however adherence to recommended best practice (e.g. having at least three meetings per year) is highest in the household goods sector and lowest in the oil and gas sector with average audit committees' compliance level standing at 100 per cent and 83.3 per cent respectively. The mining sector has the highest proportion of independent audit committee members (99.42 per cent) and the media sector has the lowest proportion of independent members (88.38 per cent). 97.7 per cent of audit committees in the mineral sector are fully independent and in compliance with the best practice guidelines as compared to 70 per cent of audit committees from the media sector.

Audit committee members in the oil and gas sector tend to have longer service tenure with 28.98 per cent of audit committee members in the sector serving longer than nine years as compared to services sector where approximately 2.64 per cent of the audit committee members have longer than 9 year tenure on their respective board of directors. On average over 90 per cent of audit committee members in the media sector are considered as financial experts compared to 73 per cent of members in the general retailers sector. However a vast proportion (e.g. 70 per cent) of these members in the media sector is non-accounting experts and only 20 per cent of these members are accounting experts. Household goods sector on the other hand has the highest proportion of accounting experts with a mean value standing at 44.45 per cent. The electrical and electronic equipment sector has the highest proportion of audit

committee members with experience of serving on another audit committee (38.33 per cent) as compared to other industries. Similarly 53.70 per cent of audit committee members in the electrical and electronic equipment sector have at least one additional directorship as compared to 28.84 per cent of audit committee members in the oil and gas sector. Equity stake is substantially high in the oil and gas sector. Over 90 per cent of audit committees in the minerals and household goods sectors are in full compliance (i.e. ACE1) with the governance code in comparison to 54.9 per cent of audit committees in the software and computer services sector. When the composite variables are extended to include both the presence of an accounting expert and the absence of members with excess of nine years' tenure, the proportion of companies in compliance reduces to 75 per cent in the household goods sector and 35 per cent in the media sector.

Other than audit committee variables, board independence is highest in the minerals sector with 93 per cent of boards are composed of majority independent directors as compared to the 40 per cent of boards in the industrial engineering. Average board meetings in the electrical & electronics sector and software & computer services sector are 10 meetings per year as compared to 7 meetings per year in the media and oil & gas sectors. As expected, the majority of sectors have been audited by the big 4 auditors. Audit delay is highest in the oil and gas sector with a mean value of 85.28 days whereas the lowest audit delay stands at 56.95 days for media sector. The mineral sector has the highest average firm size with a mean value of total assets standing at £13282 millions and the lowest firm size is averaging at £361 millions in the electrical and electronics sector. Travel and leisure sector is highly geared with a gearing value of 46.25 per cent as compared to the software and computer services sector where the gearing level is 12.21 per cent. In terms of ROA and CFO, minerals and media sectors are the high performing sectors with mean values of 19.89 per cent and 21.98 per cent respectively. Household goods sector seems to be the worst performing sector with the mean values of ROA and CFO standing at 4.57 per cent and 7.04 per cent respectively. 32.5 per cent of companies from the household sector have declared loss in one or both of the last two year income statements. The proportion of block holder share ownership remains around 40 per cent level in all sectors.

Table 5.3: Descriptive Statistics - Industry wise

Variables	Electric and Electronic Equipment		Food and Beverages Producers		General Retailer		Household Goods		Industrial Engineering		Media	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Francis dac	0.022	0.016	0.022	0.019	0.050	0.038	0.041	0.034	0.016	0.010	0.040	0.031
McNichols	0.032	0.022	0.025	0.020	0.052	0.036	0.044	0.037	0.021	0.013	0.047	0.036
AC Size	3.175	3.000	3.435	3.000	3.380	3.000	3.250	3.000	3.325	3.000	3.275	3.000
AC Size Dummy	0.825	1.000	0.758	1.000	0.870	1.000	0.950	1.000	0.950	1.000	0.975	1.000
AC meetings	3.775	3.000	3.919	4.000	3.700	4.000	3.625	3.000	3.200	3.000	4.100	4.000
AC meetings Dummy	0.900	1.000	0.968	1.000	0.890	1.000	1.000	1.000	0.900	1.000	0.975	1.000
AC % Ind	95.208	100.000	94.032	100.000	95.583	100.000	98.333	100.000	96.083	100.000	88.375	100.000
AC Ind Dummy	0.875	1.000	0.839	1.000	0.870	1.000	0.950	1.000	0.850	1.000	0.700	1.000
AC % Tenure 9	4.625	0.000	9.343	0.000	5.283	0.000	4.250	0.000	8.625	0.000	12.500	0.000
AC % Tenure 6	24.208	0.000	22.001	0.000	18.033	0.000	22.167	25.000	27.250	29.167	23.333	25.000
AC % Fin Exp	87.792	100.000	80.766	100.000	73.717	75.000	77.542	100.000	86.708	100.000	90.875	100.000
AC Fin Exp Dummy	1.000	1.000	0.984	1.000	0.960	1.000	1.000	1.000	1.000	1.000	1.000	1.000
AC % Acc Exp	42.292	33.333	32.212	33.333	32.350	33.333	44.458	33.333	36.417	33.333	20.500	25.000
AC % Non Acc Exp	45.500	50.000	48.554	50.000	41.367	50.000	33.083	33.333	50.292	50.000	70.375	66.667
AC % Gov Exp	38.333	33.333	14.437	0.000	16.667	0.000	31.250	33.333	34.958	33.333	24.583	29.167
AC Ave Directorships	0.985	0.875	0.543	0.536	0.692	0.667	0.902	0.667	0.697	0.667	0.615	0.667
AC % Addirs1plus	53.708	50.000	40.580	41.429	44.467	50.000	49.958	45.000	46.375	50.000	48.958	58.333
AC % Addirs2plus	30.000	33.333	11.736	0.000	17.333	0.000	27.083	25.000	16.542	22.500	10.000	0.000
AC % Addirs3plus	13.958	0.000	1.452	0.000	6.000	0.000	11.667	0.000	6.750	0.000	2.500	0.000
AC % Share own	0.100	0.061	0.198	0.021	0.033	0.010	0.025	0.017	0.076	0.023	0.108	0.009
ACE1	0.625	1.000	0.613	1.000	0.690	1.000	0.900	1.000	0.800	1.000	0.675	1.000
ACE2	0.550	1.000	0.419	0.000	0.480	0.000	0.750	1.000	0.475	0.000	0.350	0.000

Variables	Electric and Electronic Equipment		Food and Beverages Producers		General Retailer		Household Goods		Industrial Engineering		Media	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
ACE3	3.600	4.000	3.548	4.000	3.590	4.000	3.900	4.000	3.700	4.000	3.650	4.000
ACE4	5.225	6.000	5.113	5.000	5.180	5.000	5.725	6.000	5.250	5.000	5.000	5.000
Board Ind Dummy	0.475	0.000	0.565	1.000	0.550	1.000	0.675	1.000	0.400	0.000	0.450	0.000
Board Meetings	10.125	10.000	8.935	8.500	8.650	9.000	9.025	8.500	8.000	8.000	7.125	7.000
Big4	0.925	1.000	0.887	1.000	0.880	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Audit Delay	61.800	63.500	66.952	59.500	63.520	57.000	72.200	69.500	70.625	68.000	56.950	59.000
Log Delay	1.775	1.803	1.808	1.775	1.788	1.756	1.854	1.842	1.840	1.833	1.741	1.771
Total Asset (000)	361543	233648	4991376	651050	3737001	705050	2870517	1441485	777781	481115	2754935	2892350
Log Total Assets	8.415	8.368	9.030	8.813	9.046	8.848	9.225	9.159	8.755	8.682	9.062	9.461
% Gearing	21.890	21.985	33.685	31.487	23.361	21.168	16.884	17.447	23.321	23.290	32.291	28.443
ROA	9.771	10.150	10.857	11.630	12.214	10.425	4.570	5.320	14.105	11.665	16.519	6.581
CFO	12.060	13.031	12.812	12.372	14.797	12.524	7.046	6.232	14.281	13.164	21.982	11.552
Loss	0.200	0.000	0.113	0.000	0.090	0.000	0.325	0.000	0.075	0.000	0.200	0.000
% Block own	43.396	47.249	31.576	33.925	38.677	38.825	40.117	42.225	36.968	35.470	45.430	45.230

Table 5.3: Descriptive Statistics - Industry wise

Variables	Mining		Oil and Gas Producers		Software and Computer Services		Support Services		Travel and Leisure	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Francis dac	0.041	0.026	0.048	0.030	0.058	0.051	0.051	0.040	0.064	0.056
McNichols	0.050	0.041	0.074	0.051	0.062	0.058	0.051	0.044	0.064	0.047
AC Size	3.465	3.000	3.750	3.000	3.020	3.000	3.460	3.000	3.350	3.000
AC Size Dummy	0.977	1.000	0.944	1.000	0.824	1.000	0.921	1.000	0.890	1.000
AC meetings	4.744	4.000	3.583	3.000	4.098	4.000	4.014	4.000	3.970	4.000
AC meetings Dummy	0.953	1.000	0.833	1.000	0.863	1.000	0.986	1.000	0.930	1.000
AC % Ind	99.419	100.000	90.972	100.000	91.993	100.000	94.442	100.000	95.700	100.000
AC Ind Dummy	0.977	1.000	0.861	1.000	0.765	1.000	0.813	1.000	0.860	1.000
AC % Tenure 9	14.302	0.000	28.981	25.000	8.824	0.000	2.638	0.000	6.867	0.000
AC % Tenure 6	26.667	20.000	39.630	40.000	20.065	0.000	21.811	25.000	25.500	25.000
AC % Fin Exp	76.008	75.000	74.907	66.667	73.889	75.000	79.010	75.000	76.583	75.000
AC Fin Exp Dummy	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.990	1.000
AC % Acc Exp	31.357	33.333	30.139	33.333	37.712	33.333	41.256	33.333	36.150	33.333
AC % Non Acc Exp	44.651	40.000	44.769	33.333	36.176	33.333	37.754	33.333	40.433	40.000
AC % Gov Exp	18.992	0.000	20.278	20.000	28.039	33.333	26.314	25.000	23.200	22.500
AC Ave Directorships	0.485	0.333	0.507	0.500	0.694	0.667	0.815	0.750	0.742	0.500
AC % Addirs1plus	35.310	33.333	28.843	29.167	44.706	33.333	51.797	50.000	41.767	33.333
AC % Addirs2plus	11.822	0.000	14.815	8.333	17.745	20.000	20.567	25.000	21.133	0.000
AC % Addirs3plus	1.357	0.000	5.417	0.000	6.275	0.000	7.364	0.000	8.950	0.000
AC % Share own	0.024	0.003	4.254	0.020	0.092	0.034	0.170	0.014	0.068	0.013
ACE1	0.907	1.000	0.722	1.000	0.549	1.000	0.727	1.000	0.720	1.000

	Mining		Oil and Gas Producers		Software and Computer Services		Support Services		Travel and Leisure	
Variables	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
ACE2	0.419	0.000	0.389	0.000	0.353	0.000	0.676	1.000	0.550	1.000
ACE3	3.907	4.000	3.639	4.000	3.451	4.000	3.719	4.000	3.670	4.000
ACE4	5.302	5.000	4.889	5.000	5.157	5.000	5.590	6.000	5.370	6.000
Board Ind Dummy	0.930	1.000	0.500	0.500	0.529	1.000	0.554	1.000	0.530	1.000
Board Meetings	8.116	8.000	7.333	7.000	10.039	10.000	9.173	9.000	9.510	8.000
Big4	0.814	1.000	1.000	1.000	1.000	1.000	0.971	1.000	1.000	1.000
Audit Delay	67.186	68.000	85.278	83.000	64.843	65.000	62.101	61.000	57.370	57.000
Log Delay	1.810	1.833	1.923	1.919	1.792	1.813	1.786	1.785	1.752	1.756
Total Asset (000)	13282140	5926306	3743904	662638	930029	239882	1097945	631300	2932214	2356100
Log Total Assets	9.674	9.773	9.017	8.821	8.649	8.380	8.844	8.800	9.280	9.372
% Gearing	21.002	21.280	27.701	26.181	12.207	7.093	30.830	31.731	46.245	45.574
ROA	19.892	17.434	11.530	6.752	13.901	11.714	12.070	10.071	6.271	5.283
CFO	16.602	13.577	16.275	13.150	16.438	13.176	13.961	12.140	10.346	9.171
Loss	0.047	0.000	0.222	0.000	0.078	0.000	0.043	0.000	0.160	0.000
% Block own	41.065	44.060	40.835	43.900	40.852	40.710	39.431	38.700	41.565	37.520

5.2 Univariate Analysis

Table 5.4 presents the univariate analysis results from the independent t-test and Mann-Whitney tests highlighting the significant differences in the mean and mean rank values of various audit committee characteristics for firms that are large in size compared to firms that are small in size. As the sample size of the second empirical (earnings quality) is considerably smaller than the first empirical (audit quality), the univariate analysis is repeated to examine the significant differences in the mean and mean rank values of various audit committee characteristics for firms that are large in size compared to their counterparts. This univariate analysis is conducted by splitting the sample into larger and smaller sub-samples using the median value of the firm size (total assets). The earnings quality is calculated using McNichols (2002) and Francis *et al.,* (2005) models respectively.

The statistics show that there is no significant difference in the earnings quality of firms that are larger in size to those that are smaller in size. However, the univariate analyses highlight a substantial difference in the mean and mean rank values of audit committee variables for both the larger and smaller firms. The analysis suggests that on average audit committee size, number of meetings and percentage independence is significantly higher in those firms that are larger in size as compared to those that are smaller in size. Similarly the mean and mean rank values of companies that have full compliance with the UK Corporate Governance Code (2010) in relation to audit committee size, meetings and independence is significantly higher for larger companies than those that are small in size. As expected, the proportion of audit committee members with over nine year tenure and over six year tenure is significantly lower in larger firms compared to smaller firms. The results also show that the number of audit committees with at least one financial expert present are significantly higher for firms that are larger in size as compared to those that are small in size. The mean and mean rank values of the proportion of audit committee members with financial expertise is also higher for larger firms however the difference is not statistically significant. Upon further examination the study reveals that the firms that are larger in size have higher percentage of non-accounting financial experts and firms are smaller in size have higher percentage of audit committee members with

accounting expertise. The average additional directorships held by audit committees as well as the proportion of audit committee members with at least one, two and three additional directorship is higher for companies that are large in size compared to those that are small in size however the difference in means and mean ranks is statistically not significant. The summary statistics also show that the mean value of the audit committee share ownership is significantly lower for larger firms as compared smaller firms.

The study also shows that the audit committee effectiveness as defined by the audit committee composite variables i.e. compliance with all four aspects of recommended best practice for audit committees (ACE1 and ACE3) or when the composite variables are extended to include both the presence of an accounting qualified expert and the absence of members with excess of nine years' tenure (ACE2 and ACE4), the proportion of audit committees in compliance is significantly higher for larger firms as compared to smaller firms. The above findings highlight that larger companies are associated with higher standard of audit committee composition.

For board of director variables, the average number of boards comprised of independent non-executive directors is significantly higher for larger firms as compared to smaller firms. Of the other determinants, the mean and mean rank values of audits undertaken by one of the big 4 auditing firms is significantly higher for firms that are large in size as compared to those that are small however the mean and mean rank values for the audit delay is significantly lower in larger firms compared to the smaller firms. The mean and mean rank values of average gearing level are significantly higher for larger firms however average return on assets, cash flow from operations and equity owned by the block holders is significantly low for companies that are larger in size as compared to small size firms.

Table 5.4: Univariate Analysis

Variables	Mean		T Value (Sig)	Mean Rank		Z Value (Sig)
	Large firms	Small firms		Large firms	Small firms	
McNichols	0.049	0.049	-0.107	345.10	341.89	-.212
Francis	0.045	0.045	0.035	346.45	339.54	.457
AC Size	3.630	3.101	8.447***	399.42	292.42	7.747***
AC Size Dummy	0.962	0.823	6.065***	383.76	308.13	5.984***
AC Meetings	4.234	3.574	7.151***	399.51	292.33	7.399***
AC Meetings Dummy	0.977	0.890	4.653***	361.01	330.94	4.585***
AC % Ind	97.497	91.923	5.655***	372.38	319.54	5.553***
AC Ind Dummy	0.922	0.771	5.622***	372.04	319.89	5.501***
AC % Tenure 9	5.783	10.053	-3.233***	331.38	360.66	-2.718***
AC % Tenure 6	21.201	25.763	-2.261**	333.98	358.06	-1.680*
AC % Fin Exp	79.479	78.174	0.730	349.59	342.40	.501
AC Fin Exp Dummy	1.000	0.983	2.471**	349.00	342.99	2.462**
AC % Acc Exp	33.767	37.686	-2.376**	326.78	365.28	-2.596***
AC % Non Acc Exp	45.713	40.488	2.700***	366.18	325.76	2.706***
AC % Gov Exp	23.230	25.053	-0.957	337.05	354.98	-1.234
ACE1	0.867	0.559	9.496***	399.07	292.78	8.936***
ACE2	0.624	0.412	5.717***	382.69	309.21	5.590***
ACE3	3.861	3.467	9.646***	400.86	290.98	9.167***
ACE4	5.549	5.055	7.719***	392.99	298.88	6.818***
AC Ave Directorships	0.749	0.677	1.641	355.56	336.41	1.270
AC % Addirs1plus	46.702	43.411	1.476	354.02	337.96	1.070
AC % Addirs2plus	19.802	17.024	1.588	350.84	341.15	.691
AC % Addirs3plus	7.077	6.169	0.807	350.61	341.38	.884
AC % Share own	0.028	0.601	-2.633***	244.34	447.96	-13.407***
Board Ind Dummy	0.662	0.452	5.668***	382.17	309.73	5.544***
Board Meetings	8.884	8.890	-0.023	342.09	349.92	-.520
big4	0.983	0.919	3.915***	357.01	334.96	3.875***
Log Delay	1.778	1.815	-4.578***	309.38	382.73	-4.831***
% Gearing	34.145	22.663	8.172***	408.77	283.04	8.278***
ROA	8.513	14.585	-6.011***	290.40	401.77	-7.333***
CFO	11.606	16.193	-5.595***	301.63	390.50	-5.851***
Loss	0.092	0.070	1.103	349.95	342.03	1.103
% Block own	35.653	43.717	-5.988***	300.84	391.29	-5.955***

5.3 Correlation Matrix

Table 5.5 contains correlations between the two dependent variables as well as between the explanatory variables. Columns one of table 5.5 shows that audit committees having three or more meetings and variables representing audit committee effectiveness (ACE1 and ACE3) are significantly negatively correlated with the McNichols measure of earnings management. Column two of the table 10 shows that audit committees having three or more meetings and the dummy for audit committee independence and the audit committee effectiveness variables (ACE1 and ACE3) are significantly negatively correlated with the Francis measure of earnings management. Audit committee average directorships and the proportion of audit committee members with at least one additional directorship are significantly positively correlated with the Francis measure of earnings management. As is often the case in empirical studies of this kind, firm size variable i.e. the log of total assets significantly correlated with the presence of a big 4 auditor, gearing, ROA, CFO and quite a number of the audit committee variables. Of course, since this study has more than one measure of each of the audit committee characteristics therefore the correlation matrix show significant correlations between these linked variables. Also, the four audit committee effectiveness variables are highly correlated with the various audit committee variables as the measures of effectiveness incorporate various dummy variables I use in relation to audit committee characteristics. There are variables in the correlation matrix that have high correlations between each other however all of these highly correlated variables have been included separately in each of the regression models and none of the variables in each of the models have a correlation value of above 0.70.

Table 5.5: Earnings management correlation matrix

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1McNichols	1															
2Francis	.831**	1														
3AC Size	.038	.007	1													
4AC Size Dummy	.035	.012	.548**	1												
5AC Meetings	-.026	-.038	.194**	.149**	1											
6AC Meetings Dum	-.133**	-.091*	.093*	.114**	.419**	1										
7AC % Ind	-.061	-.071	-.026	-.068	.097*	.121**	1									
8AC Ind Dummy	-.068	-.099**	-.061	-.095*	.067	.112**	.938**	1								
9AC % Tenure 9	.054	.011	.018	.023	-.060	-.160**	-.287**	-.219**	1							
10AC % Tenure 6	.017	.002	.050	-.020	-.043	-.117**	-.156**	-.127**	.563**	1						
11AC % Fin Exp	-.039	-.027	-.061	.007	.088*	.038	.013	.037	-.055	-.020	1					
12 AC Fin Exp Dum	.028	.047	.148**	.270**	.080*	.038	-.037	-.040	-.002	-.093*	.314**	1				
13AC % Acc Exp	-.014	.023	-.246**	-.206**	-.010	.000	.029	.018	-.070	-.041	.365**	.154**	1			
14AC % Non Acc Exp	-.023	-.044	.154**	.181**	.089*	.036	-.013	.019	.009	.017	.609**	.158**	-.516**	1		
15AC % Gov Exp	-.002	-.018	-.104**	-.049	.001	.054	.076*	.054	-.233**	-.122**	.243**	.090*	.264**	-.001	1	
16ACE1	-.076*	-.104**	.306**	.546**	.250**	.421**	.630**	.672**	-.174**	-.129**	.053	.148**	-.101**	.134**	.018	1
17ACE2	-.045	-.059	.168**	.359**	.109**	.277**	.414**	.441**	-.470**	-.285**	.085*	.097*	.157**	-.055	.159**	.657**
18ACE3	-.077*	-.088*	.322**	.574**	.318**	.574**	.601**	.621**	-.195**	-.157**	.095*	.300**	-.075*	.151**	.045	.926**
19ACE4	-.066	-.041	.177**	.349**	.218**	.490**	.502**	.496**	-.604**	-.395**	.160**	.282**	.242**	-.059	.228**	.698**
20AC Ave Dirs	.065	.093*	-.007	-.010	.065	.110**	.084*	.043	-.274**	-.138**	.273**	.103**	.255**	.034	.641**	.043
21AC % Addirs1plus	.032	.078*	.028	.021	.042	.078*	.144**	.106**	-.267**	-.149**	.315**	.117**	.197**	.123**	.537**	.091*
22AC % Addirs2plus	.063	.070	-.024	-.028	.088*	.109**	.028	-.008	-.230**	-.112**	.202**	.075*	.271**	-.045	.620**	.004
23AC % Addirs3plus	.056	.055	-.023	-.019	.022	.084*	.008	-.018	-.140**	-.059	.111**	.042	.165**	-.038	.385**	-.002
24AC % Share own	.025	-.033	.035	.028	-.087*	-.137**	-.419**	-.218**	.340**	.204**	.049	.008	-.093*	.125**	-.085*	-.150**
25Board Ind Dum	.035	-.007	.243**	.238**	.139**	.054	.352**	.348**	-.067	-.072	.061	.074	-.040	.090*	-.049	.389**
26Board Meetings	.040	.025	-.019	.027	.176**	.021	.030	.011	-.166**	-.148**	.040	.032	.049	-.005	.123**	.032
27Big4	.010	-.012	.159**	.181**	.025	.073	.073	.070	-.108**	.002	.118**	-.021	.102**	.022	.115**	.167**

28 Log Delay	-.009	-.053	-.107**	-.187**	-.073	-.131**	-.074	-.053	.105**	.019	.002	-.092*	.019	-.015	.014	-.194**
29 Log Total Asset	-.032	-.049	.385**	.232**	.318**	.201**	.261**	.258**	-.096*	-.066	.062	.102**	-.090*	.134**	-.048	.380**
30 % Gearing	-.003	.045	.128**	.055	-.006	.106**	.097*	.107**	-.063	-.051	.042	.050	-.037	.070	.048	.131**
31 ROA	.051	.046	-.050	-.020	-.025	-.067	.023	.015	.085*	.061	-.031	-.060	-.043	.008	-.110**	-.026
32 CFO	.052	.019	-.077*	-.023	-.023	-.056	-.041	-.033	.068	.054	-.009	-.112**	-.037	.024	-.106**	-.045
33Loss	-.070	-.078*	-.009	.029	.064	-.007	-.063	-.038	-.038	-.071	.023	.035	.096*	-.061	.091*	.001
34 % Block own	.045	.057	-.179**	-.089*	-.023	.018	-.011	-.006	-.003	-.008	.029	-.152**	.059	-.024	.066	-.063

Variables	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
17ACE2	1																	
18ACE3	.609**	1																
19ACE4	.826**	.760**	1															
20AC Ave Dirs	.225**	.086*	.284**	1														
21AC % Addirs1plus	.228**	.131**	.286**	.821**	1													
22AC % Addirs2plus	.200**	.039	.240**	.864**	.528**	1												
23AC % Addirs3plus	.112**	.022	.139**	.734**	.343**	.628**	1											
24AC % Share own	-.101**	-.181**	-.253**	-.109**	-.137**	-.065	-.041	1										
25Board Ind Dum	.236**	.383**	.278**	.001	.061	-.053	-.014	-.105**	1									
26Board Meetings	.124**	.035	.125**	.112**	.086*	.083*	.122**	-.042	.030	1								
27Big4	.182**	.171**	.193**	.175**	.188**	.148**	.079*	.014	.040	.057	1							
28 Log Delay	-.120**	-.206**	-.151**	-.045	-.031	-.031	-.031	.204**	-.086*	-.062	-.171**	1						
29 Log Total Asset	.197**	.392**	.283**	.073	.099**	.051	.009	-.106**	.304**	-.041	.165**	-.161**	1					
30 % Gearing	.156**	.152**	.151**	.032	-.009	.072	.030	-.041	.054	.022	.193**	-.197**	.304**	1				
31 ROA	-.122**	-.040	-.101**	-.066	-.012	-.094*	-.079*	-.022	-.075*	-.095*	-.042	.050	-.262**	-.286**	1			
32 CFO	-.112**	-.076*	-.113**	-.062	-.042	-.064	-.047	.000	-.114**	-.079*	.012	-.008	-.263**	-.210**	.782**	1		
33 Loss	.057	-.006	.043	.031	-.009	.062	.046	-.029	.020	.098*	.085*	.012	.068	.134**	-.335**	-.214**	1	
34 % Block own	-.038	-.068	-.051	-.037	-.051	-.023	-.001	-.100**	-.020	-.032	.077*	.028	-.268**	.036	-.005	.031	.140**	1

5.4 Multivariate Regression Analysis

The results of the multivariate analysis are presented in tables 5.6 to 5.13. In tables 5.6 to 5.9 this study uses the McNichols (2002) model of earnings quality as the dependent variable while in tables 5.10 to 5.13 this study utilises the Francis et al., (2005) model of earnings quality[30]. The study then runs identical multivariate regressions in each table for both models. For each regression this study utilises panel data analysis using dummies for each of the four year. In all regressions industry dummies are included to control for sector level variations. In all regressions the control variables are used to represent company size, performance, gearing, the presence of a big 4 audit firm and audit delay. Each regression model also includes the share ownership of audit committee members and a measure of audit committee busyness.

5.4.1 Earnings Quality – McNichols Model (2002)

This model is based on the assumption that earnings quality can deteriorate by both the intentional and unintentional errors of management in the accruals estimation. It is argued that the presence of an effective monitoring body (i.e. audit committee) will not only prevent management from making intentional errors but also motivate them to exercise greater care in reducing unintentional errors, hence resulting in improved earnings quality (Dhaliwal *et al.,* 2010). This study utilises four main regression models and various tests of robustness to investigate whether audit committee characteristics have any influence on a firm's earnings quality.

In regression model 1 of tables 5.6 this study uses the dummy variables for each of the four audit committee characteristics currently recommended as best practice for UK listed companies (UK Corporate Governance Code, 2010) while in model 2 these dummy variables are substituted with corresponding absolute variables. In model 3 a dummy variable representing those firms whose audit committees satisfy all four of the recommended characteristics (ACE1) and in model 4 dummy variable is extended to include both the presence of an accounting expert and the absence of members with excess of nine years' tenure (ACE2).

[30] Earnings quality is an inverse measure of earnings management.

Table 5.6 (McNichols Model): OLS regressions explaining the determinants of earnings quality for FTSE 350 companies between 2007 and 2010 (***, **, * denote statistical significance at 1%, 5% and 10% respectively)

	Model 1		Model 2		Model 3		Model 4	
	Coef	T-Value	Coef	T-Value	Coef	T-Value	Coef	T-Value
(Constant)	.133	2.447**	.156	3.052***	.139	2.783***	.144	2.867***
Electric & electronic equip	-.039	-4.304***	-.040	-4.434***	-.039	-4.390***	-.040	-4.476***
Food & beverage producers	-.038	-5.124***	-.041	-5.567***	-.041	-5.499***	-.041	-5.493***
General retailer	-.014	-2.098**	-.016	-2.317**	-.014	-2.093**	-.014	-2.148**
Household goods	-.018	-1.996**	-.021	-2.273**	-.019	-2.027**	-.020	-2.171**
Industrial engineering	-.046	-5.078***	-.046	-5.154***	-.044	-4.859***	-.046	-5.147***
Media	-.017	-1.986**	-.018	-1.988**	-.017	-1.942*	-.017	-2.008**
Mining	-.014	-1.495	-.012	-1.331	-.013	-1.447	-.014	-1.533
Oil and gas producer	.013	1.377	.012	1.246	.015	1.584	.013	1.354
Software & comp services	-.009	-1.057	-.008	-.963	-.009	-1.061	-.009	-1.091
Support services	-.017	-2.678***	-.019	-3.027***	-.017	-2.779***	-.017	-2.773***
2008	-.002	-.403	-.002	-.378	-.002	-.505	-.003	-.533
2009	-.009	-1.833*	-.009	-1.814*	-.009	-1.872*	-.009	-1.931*
2010	-.012	-2.424**	-.012	-2.388**	-.012	-2.375**	-.012	-2.411**
big4	-.002	-.210	-.003	-.326	-.001	-.065	-.001	-.089
Log delay	-.009	-.507	-.005	-.300	-.014	-.802	-.010	-.558
Log total asset	-.005	-1.300	-.007	-1.749*	-.005	-1.413	-.007	-1.881*
% gearing	.000	-.173	.000	-.336	.000	-.266	.000	-.263
ROA	.000	.134	.000	.143	.000	.245	.000	.090
CFO	.000	.141	.000	.048	.000	.072	.000	.071
Loss	-.011	-1.962*	-.010	-1.724*	-.010	-1.750*	-.009	-1.665*
% Block own	.000	.524	.000	.331	.000	.114	.000	.059
Board Ind Dummy	.007	1.793*	.007	1.768*	.008	2.216**	.007	1.875*
Board Meetings	.001	1.039	.001	1.289	.001	1.117	.001	1.115
AC % Share own	-.001	-.938	-.001	-1.117	.000	-.546	.000	-.403
AC Ave Directorships	.008	2.099**	.009	2.249**	.007	1.817*	.007	2.049**
AC Size Dummy	.004	.643						
AC Meet Dummy	-.021	-3.025***						
AC Ind Dummy	-.009	-1.702*						
Fin Exp Dummy	.010	.527						
AC Size			.003	1.445				
AC Meetings			-.002	-1.117				
AC % Ind			.000	-1.625*				
AC % Fin Exp			.000	.019				
ACE1					-.010	-2.186**		
ACE2							-.005	-1.423
F Test	3.741***		3.496***		3.770***		3.653***	
Adjusted R^2	.107		.105		.098		.095	
N	691		691		691		691	

Definitions of variables

Dependent variable: earnings quality measured using McNichols (2002) model[31]

Independent variables: Big4 = dummy variable indicating instances where the audit was carried out by a Big4 audit firm; Log Delay = the natural logarithm of audit delay; Log Total Assets = the natural logarithm of total assets; % Gearing = percentage of total long-term finance represented by long term debt; ROA = return on assets; CFO = cash flow from operations; Loss = dummy variable representing the firm incurring loss in last two years; % Block Own = percentage of equity owned by the block holders; Board Ind dummy = dummy variable indicating instances where boards comprised of majority independent directors; Board meetings = the number of meetings held by the board during the year; AC % Share own = percentage of equity held by audit committee members; AC Ave Directorships = average directorships held by the audit committee members; AC Size dummy = dummy variable indicating instances where the audit committee contains three or more members; AC Meetings dummy = dummy variable indicating instances where the audit committee held at least three meetings; AC Ind dummy = dummy variable indicating instances where the audit committee had solely independent non-executive directors; AC Fin Exp dummy = dummy variable indicating instances where the audit committees had financial expertise; AC Size = number of audit committee members; AC Meetings = Number of audit committee meetings held during the year; AC % Ind = Percentage of audit committee members who are independent non-executive directors; AC % Fin Exp = Percentage of audit committee members who are financial experts; ACE1 = dummy variable representing instances where audit committees comprise at least three members, contained at least one financial expert, all members being independent and met at least three times during the financial year; ACE2 = dummy variable representing instances where audit committees comprise at least three members, contained at least one financial expert, all members being independent and met at least three times during the financial year, contains one accounting expert and has no member with more than 9 years tenure.

[31] The proxy for accruals quality is measured by estimating the following regression by industry and year;
$\Delta WC_t = b0 + b1CFO_{t-1} + b2CFO_t + b3CFOt_{+1} + b4\Delta Rev_t + b5PPE_t + \varepsilon_t$ *(1)*
Where Δ in working capital in year t (ΔWC*t*) = (ΔCurrent Assets – ΔCurrent Liabilities) – ΔCash; CFO*t*-1 represents 'Cash flows from operations in year *t* – 1'; CFO*t* represents 'Cash flows from operations in year *t*' and CFO*t*+1 represents 'Cash flows from operations year in year *t* + 1'; ΔRev*t* represents 'Sales in year *t* – Sales in year *t* – 1' and PPE*t* represents 'Gross property, plant and equipment in year *t*'. All variables shown above are scaled by average assets. Operationally, this model measures accrual quality for each firm by using the absolute value of the residual as the measure of accrual quality (Srindhi and Gul, 2007; Baxter and Cotter, 2009). The high value of absolute residual for each sample company signifies the low quality of earnings.

The regression results in column 1 show that the firms experiencing losses appear to have a negative and significant association with earnings management. This finding is consistent with the prior work in this area (Davidson et al., 2005). Unexpectedly, board independence has shown a significant positive association with earnings management.

Model 1 highlights three audit committee variables having a statistically significant impact on the McNichols measure of earnings quality. First, the dummy variable representing audit committee independence has a negative impact on earnings management. This suggests that fully independent audit committees are better able to constrain earnings management practices. The finding is consistent with the prior research (Vafeas, 2005; Yang and Krishnan, 2005) and suggests that independent directors are more concerned about their reputation in the market and hence more objective in their monitoring role (Fama and Jenson, 1983). Second, the dummy variable representing the holding of a minimum of three meetings per year has a negative and significant impact on earnings management. This is consistent with expectations since audit committees meeting more frequently are expected to be more effective and diligent monitors of the financial reporting process. Third, the average number of additional directorships held by audit committee members has a positive impact on earnings management. This finding is consistent with the busyness hypothesis whereby audit committee members holding other directorships may be over committed with other directorships to adequately monitor the financial reporting process. In model 2 when the dummy variables are substituted with the absolute measures of the recommended key audit committee characteristics, the proportion of audit committee members that are independent has a negative and statistically significant impact on earnings management. This finding further strengthens the argument that independent members are more objective in their monitoring of the financial reporting process (Fama and Jenson, 1983). In line with the busyness hypothesis, the impact of the busyness of audit committee members on earnings quality remains negative and significant. These variables are significant at the ten and five per cent level of significance respectively and these findings are consistent with expectations.

In models 3 and 4 of table 5.6 the researcher brings in the composite dummies representing those firms adhering to all four recommendations of best practice (ACE1) and those that comply with best practice as in ACE1 but, in addition, have no member with longer than nine years' tenure and also has at least one accounting expert (ACE2). In model 3 ACE1 has a negative impact at five per cent level of significance. This finding is consistent with expectations in that it suggests when companies satisfy all four of the current recommendations of best practice the extent of earnings management is reduced hence the quality of financial statements is better. ACE2 has no statistically significant impact on earnings management[32]. These findings are interesting in that they identify a consistent impact of good governance practice on earnings quality and should serve as reassuring to regulators who may interpret this finding as supportive of their recommendations.

In summary therefore, the empirical findings reported in table 5.6 find that the key ingredients of what regulators perceive as more effective audit committees are associated with higher earnings quality. The findings in relation to audit committee independence and activity are largely consistent with prior research as Lo *et al.*, (2010); Vafeas (2005); Xie *et al.*, (2003); Yang and Krishnan (2005) found a positive association between audit committee independence and earnings quality. Similarly Vafeas (2005), Koh *et al.* (2007) and Kent *et al.* (2010) reported a positive impact of audit committee meetings on earnings quality. This study however failed to find any significant association between financial expertise and earnings quality as it was documented in the prior literature (Lo *et al.* 2010; Sun *et al.* 2012). Ghosh et *al.,* (2010) argues that members with financial expertise have a thorough knowledge of technical and accounting standards and therefore are better able to constrain earnings management. However this study has failed to find any significant impact of financial expertise on the quality of earnings. The negative impact of holding external directorships on earnings quality confirms the busyness hypothesis, as these additional directorships

[32] Two alternative effectiveness variables (ACE3 and ACE4) representing the aggregate count of each of these elements of compliance from ACE1 and ACE2 have a significant negative impact on earnings management suggesting that audit committees that comply with the recommended best practice are far more effective in enhancing earnings quality as compared to their counterparts.

could result in a conflict of interest if directors accept too many directorships and focus more on their own interest than on shareholder interests.

The F-statistics of each model in table 5.6 are significant at one per cent level, suggesting that the models are statistically valid. The adjusted R^2 for all models in table 5.7 ranges between 9.5 per cent and 10.7 per cent. These values although low are consistent with the prior research conducted in this area. Ghosh *et al.* 2010), Baxter and Cotter (2009) and Kent *et al.,* (2010) reported the R^2 value as 8.28 per cent, 9.8 per cent and 2.8 per cent respectively. The total number of observations in each model equals 691.

5.4.2 Tests of Robustness

Firstly as a robustness measure, this study re-runs the main regression models reported in Table 5.6 and examines whether the clustering within firms may have biased the estimated standard errors which may have affected the significant levels found for the estimated coefficients. These tests show that the findings reported in the main regression analysis hold strong and are not sensitive to this approach. Additionally a number of other robustness tests have been used to check the strength of the main findings and these are as follows.

Table 5.7 provides a thorough analysis of audit committee expertise, audit committee busyness and audit committee tenure variables and extends our understanding of the impact of these variables on earnings management. In model 1, the proportion of audit committee members with accounting expertise have been included instead of broadly defined financial expertise and model 2 includes the proportion of members with non-accounting expertise. This study also utilises a continuous variable representing the proportion of audit committee members with experience of serving on other audit committees. In models 3 and 4 this study utilises variables representing the extent of holding other directorships by audit committee members: the proportion holding one or more additional directorships in model 3 and two or more additional directorships in model 4. In regressions model 5 and 6 this study investigates the importance of tenure of audit committee members on earnings management by including variables representing the proportion of members with excess of nine years' tenure and the proportion of members with over six years' tenure.

In models 1 and 2, the proportion of accounting financial experts[33] on the audit committee and the proportion of non-accounting experts has no significant impact on earnings management. The percentage of audit committee members with governance expertise also has no significant impact on earnings management (un-tabulated). In models 3 and 4, this study substitutes the average number of additional directorships held by audit committee members by variables representing the proportion of audit

[33] The dummy variable representing audit committees with at least one accounting expert also has no impact on earnings quality and the proportion of audit committee members with accounting qualification also has no impact on earnings quality.

committee members holding one or more other board seats and two or more other board seats respectively. In table 5.7, where this study uses the McNichols model of earnings management, holding one or more outside board seats and holding at least two or more seats has a positive impact on earnings management at 10 per cent level of significance. These results suggest that busy audit committee members are less effective in constraining earnings management practices. Although a positive correlation exists among greater tenure and earnings management the results show that none of these variables have any significant impact on earnings management. Taken together, these findings suggest that it is the level of audit committee independence that really influences the quality of financial statements rather than other proxies for independence.

Table 5.7 (McNichols Model): OLS regressions explaining the determinants of earnings quality for FTSE 350 companies between 2007 and 2010 (***, **, * denote statistical significance at 1%, 5% and 10% respectively)

	AC Expertise Variations				AC Busyness Variations				AC Tenure Variations			
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Coef	T-Value	Coef	T-Value	Coef	T-Value	Coef	T-Value	Coef	T-Value	Coef	T-Value
(Constant)	.147	2.912***	.145	2.883***	.134	2.457**	.129	2.374**	.130	2.364**	.134	2.428**
Big4	-.002	-.222	-.002	-.265	-.001	-.150	-.001	-.123	-.002	-.239	-.003	-.299
Log Delay	-.010	-.558	-.010	-.552	-.010	-.575	-.009	-.481	-.008	-.423	-.008	-.442
Log Total Assets	-.005	-1.315	-.005	-1.304	-.005	-1.279	-.005	-1.214	-.006	-1.545	-.006	-1.606
% Gearing	.000	-.169	.000	-.155	.000	-.133	.000	-.321	.000	-.328	.000	-.318
ROA	.000	.167	.000	.166	.000	.106	.000	.204	.000	-.062	.000	-.038
CFO	.000	.096	.000	.088	.000	.220	.000	.093	.000	.210	.000	.181
Loss Dummy	-.011	-1.888*	-.011	-1.921*	-.011	-1.933*	-.011	-1.990**	-.011	-1.852*	-.011	-1.855*
% Block own	.000	.465	.000	.457	.000	.452	.000	.512	.000	.491	.000	.493
Board Ind Dummy	.007	1.806*	.007	1.789*	.007	1.760*	.007	1.881*	.005	1.332	.005	1.309
Board Meetings	.001	1.025	.001	1.029	.001	1.080	.001	1.116	.001	1.095	.001	1.026
AC % Share own	-.001	-.961	-.001	-.946	-.001	-.938	-.001	-.976	-.001	-.833	.000	-.669
AC Ave Directorships	.008	2.188**	.008	2.138**					.008	2.214**	.008	2.140**
AC size Dummy	.004	.672	.005	.755	.003	.496	.004	.618	.006	1.032	.007	1.087
AC Meetings Dummy	-.021	-3.037***	-.021	-3.031***	-.020	-2.897***	-.022	-3.044***	-.022	-3.073***	-.022	-3.122***
AC Ind Dummy	-.009	-1.728*	-.009	-1.717*	-.010	-1.820*	-.009	-1.622*				
AC Fin Exp Dummy					.011	.560	.012	.599	.011	.560	.011	.572
AC % Acc Exp	.000	-.443										
AC % Non Acc Exp			.000	.144								
AC % Adddirs1plus					.000	1.373*						
AC % Adddirs2plus							.000	1.854*				
AC % Tenure 9									.000	.812		
AC % Tenure 6											.000	.154
Industry Dummies	Included		Included		Included		Included		Included		Included	
Year Dummies	Included		Included		Included		Included		Included		Included	
F Test	3.738***		3.731***		3.644***		3.704***		3.654***		3.630***	
Adjusted R^2	.107		.107		.104		.106		.104		.103	
N	691		691		691		691		691		691	

Definitions of variables

Dependent variable: earnings quality measured using McNichols (2002) model[34]

Independent variables: Big4 = dummy variable indicating instances where the audit was carried out by a Big4 audit firm; Log Delay = the natural logarithm of audit delay; Log Total Assets = the natural logarithm of total assets; % Gearing = percentage of total long-term finance represented by long term debt; ROA = return on assets; CFO = cash flow from operations; Loss = dummy variable representing the firm incurring loss in last two years; % Block Own = percentage of equity owned by the block holders; Board Ind dummy = dummy variable indicating instances where boards comprised of majority independent directors; Board meetings = the number of meetings held by the board during the year; AC % Share own = percentage of equity held by audit committee members; AC Ave Directorships = average directorships held by the audit committee members; AC Size dummy = dummy variable indicating instances where the audit committee contains three or more members; AC Meetings dummy = dummy variable indicating instances where the audit committee held at least three meetings; AC Ind dummy = dummy variable indicating instances where the audit committee had solely independent non-executive directors; AC Fin Exp dummy = dummy variable indicating instances where the audit committees had financial expertise; AC % Acc Exp = Percentage of audit committee members who are accounting experts; AC % Non Acc Exp = percentage of audit committee members who are non-accounting experts; AC % Addir1plus = percentage of audit committee members with at least one additional directorship; AC % Addir2plus = percentage of audit committee members with at least two additional directorships; AC % Tenure 9 = percentage of audit committee members who have served on company board for more than 9 years; AC % Tenure 6 = percentage of audit committee members who have served on company board for more than 6 years.

[34] The proxy for accruals quality is measured by estimating the following regression by industry and year;
$\Delta WC_t = b0 + b1CFO_{t-1} + b2CFO_t + b3CFOt_{+1} + b4\Delta Rev_t + b5PPE_t + \varepsilon_t$ *(1)*
[Where Δ in working capital in year t (ΔWC*t*) = (ΔCurrent Assets – ΔCurrent Liabilities) – ΔCash; CFO*t*-1 represents 'Cash flows from operations in year *t* – 1'; CFO*t* represents 'Cash flows from operations in year *t*' and CFO*t*+1 represents 'Cash flows from operations year in year *t* + 1'; ΔRev*t* represents 'Sales in year *t* – Sales in year *t* – 1' and PPE*t* represents 'Gross property, plant and equipment in year *t*'. All variables shown above are scaled by average assets.]
Operationally, this model measures accrual quality for each firm by using the absolute value of the residual as the measure of accrual quality (Srindhi and Gul, 2007; Baxter and Cotter, 2009). The high value of absolute residual for each sample company signifies the low quality of earnings.

It should also be noted that in regression models 1 to 6, the dummy variable representing audit committees holding at least three meetings per year has a negative and statistically significant impact on earnings management. This finding is consistent with the argument that more active audit committees monitor the quality of a company's financial statements more diligently. It is also worth noting that the dummy variable representing those audit committees that are comprised only of independent non-executives also has a continuous significant negative impact on earnings management, suggesting that completely independent audit committees are more effective in restraining earnings management and hence improving earnings quality. These findings are largely consistent with prior research as Lo *et al.*, (2010); Vafeas (2005) and Yang and Krishnan (2005) found a positive association between audit committee independence and earnings quality. Similarly Vafeas (2005), Koh *et al.* (2007) and Kent *et al.* (2010) reported a positive impact of audit committee meetings on earnings quality. The regression results presented here also provide some interesting additions to our understanding of the impact of a variety of audit committee financial expertise and holding of multiple directorships on earnings quality in a contemporary setting. First, these findings highlight the apparent absence of a link between accounting experts and earnings management. This result does not support the prior evidence of the positive impact of accounting financial expertise on earnings quality (Krishnan and Visvanathan 2008). Second, findings in relation to holding of additional directorships by the audit committee members show that these members are unable to pay adequate attention to the quality of financial statements and hence result in a high earnings management and low earnings quality. This finding shows that these additional directorships could result in a conflict of interest if directors accept too many directorships and focus more on their own interest than on shareholder interests (Fich and Shivdasani, 2006).

The rest of the regression results for each model in table 5.7 are mainly consistent. Consistent with prior research (Davidson et al., 2005), firms experiencing losses are significantly negatively associated with earnings management. Unexpectedly board independence has shown a positive association with earnings management, however the strength of the association is quite weak. The F-statistics of each model are

significant at one per cent level, suggesting that the models are statistically valid. The adjusted R^2 for all models in table 5.7 ranges between 10.4 per cent and 10.8 per cent. These values although low are consistent with the prior research conducted in this area. Ghosh *et al.* 2010), Baxter and Cotter (2009) and Kent *et al.,* (2010) reported the R^2 value as 8.28 per cent, 9.8 per cent and 2.8 per cent respectively. The number of observation in each model equals 691.

The study also splits the sample into two parts based on the median of total assets as proxy of size and runs separate regressions for larger and smaller firms. Appendix C represents larger and smaller firms respectively. It is argued previously that larger firms behave differently in term of their demand for financial reporting quality to smaller firms.

While analysing large firms, firm size in terms of total assets is negative and significantly associated with earnings management. The result shows that bigger firms can afford to have better internal control mechanisms and hence an improved quality of earnings. Percentage gearing is negatively associated with earnings management suggesting that higher leverage results in greater external monitoring and therefore have a positive impact on earnings quality. Audit committee meetings have a negative and significant impact on earnings management showing that more active and diligent audit committees are better able to constrain earnings management practices. Previous research has also shown that higher frequency of meetings results in lower earnings management (Koh *et al.,* 2007; Kent *et al.,* 2010). While analysing small firms, firms experiencing loss are negatively associated with earnings management. From the audit committee variables, audit committee meetings have a negative and significant impact on earnings management signifying the level of diligence and scrutiny exercised by the audit committee members and hence resulting in an improved earnings quality. The F-statistics for each model suggest that the models are statistically valid. The adjusted R^2 for all models ranges between 5.7 per cent and 36.3 per cent. The total numbers of observations in each model are 346 and 345 respectively.

5.4.3 Earnings Quality – Francis et al., (2005) Model

Francis *et al.,* (2005) separates McNichols (2002) measure of earnings management into its discretionary and non-discretionary elements. As the overseer of the financial reporting process and having fundamental responsibility in monitoring the integrity of the financial statements of the company, an effective audit committee should prevent management from making intentional errors. To capture the impact of the audit committee characteristics in constraining earnings management[35] this study repeats the four main regression models and robustness tests used above for the McNichols model of earnings quality.

In model 1 of table 5.8 this study uses the dummy variables for each of the four audit committee characteristics currently recommended as best practice for UK listed companies (UK Corporate Governance Code, 2010) while in model 2 these dummy variables are substituted with corresponding actual variables. In model 3 a dummy variable representing those firms whose audit committees satisfy all four of the recommended characteristics (ACE1) and in model 4 dummy variable is extended to include both the presence of an accounting expert and the absence of members with excess of nine years' tenure (ACE2). The regression results in column 1 show the log of total assets has a significant and negative impact on earnings management. Prior research suggests that bigger firms can afford to have better internal control mechanisms and hence an improved quality of earnings. The firms experiencing loss also have a negative and significant association with earnings management. This finding is in line with the prior research conducted in this area (Davidson et al., 2005).

[35] Earnings quality is an inverse measure of earnings management.

Table 5.8 (Francis et al., 2005): OLS regressions explaining the determinants of earnings quality for FTSE 350 companies between 2007 and 2010 (***, **, * denote statistical significance at 1%, 5% and 10% respectively)

	Model 1		Model 2		Model 3		Model 4	
	Coef	T-Value	Coef	T-Value	Coef	T-Value	Coef	T-Value
(Constant)	.161	3.202***	.202	4.310***	.182	3.948***	.186	4.028***
Electric & Electronic Equip	-.050	-5.998***	-.051	-6.131***	-.050	-6.077***	-.051	-6.156***
Food & Bev Producers	-.042	-6.145***	-.045	-6.600***	-.044	-6.452***	-.044	-6.447***
General Retailer	-.015	-2.480**	-.017	-2.793***	-.016	-2.548**	-.016	-2.597**
Household Goods	-.020	-2.356**	-.021	-2.528**	-.020	-2.324**	-.021	-2.448**
Industrial Engineering	-.049	-5.975***	-.051	-6.124***	-.048	-5.717***	-.050	-6.032***
Media	-.024	-3.060***	-.025	-3.050***	-.023	-2.907***	-.024	-2.995***
Mining	-.019	-2.262**	-.017	-2.025**	-.019	-2.189**	-.020	-2.295**
Oil and Gas Producer	-.008	-.909	-.009	-1.033	-.007	-.719	-.009	-1.003
Software & Comp Services	-.011	-1.381	-.009	-1.195	-.010	-1.340	-.011	-1.382
Support Services	-.018	-3.101***	-.019	-3.322***	-.017	-3.065***	-.017	-3.014***
2008	-.007	-1.499	-.007	-1.496	-.007	-1.626	-.007	-1.658*
2009	-.014	-3.068***	-.014	-3.043***	-.014	-3.109***	-.014	-3.170***
2010	-.014	-3.100***	-.014	-3.055***	-.014	-3.075***	-.014	-3.103***
Big4	-.006	-.804	-.009	-1.068	-.006	-.755	-.006	-.750
Log Delay	-.014	-.833	-.013	-.781	-.021	-1.275	-.017	-1.030
Log Total Assets	-.008	-2.115**	-.010	-2.514**	-.008	-2.123**	-.009	-2.619***
% Gearing	.000	.929	.000	.806	.000	.830	.000	.852
ROA	.000	.786	.000	.831	.000	.890	.000	.718
CFO	.000	-.851	.000	-1.031	.000	-.964	.000	-.959
Loss Dummy	-.010	-1.871*	-.008	-1.572	-.009	-1.635	-.008	-1.534
% Block own	.000	.635	.000	.362	.000	.201	.000	.140
Board Ind Dummy	.004	.998	.003	.817	.004	1.272	.003	.929
Board Meetings	.000	.253	.000	.549	.000	.354	.000	.378
AC % Share own	-.001	-1.757*	-.001	-2.002**	-.001	-1.327	-.001	-1.171
AC Ave Directorships	.010	3.106***	.013	3.393***	.010	2.919***	.011	3.206***
AC Size Dummy	.003	.429						
AC Meetings Dummy	-.014	-2.147**						
AC Ind Dummy	-.011	-2.287**						
AC Fin Exp Dummy	.022	1.215						
AC Size			.003	1.331				
AC Meetings			-.002	-1.209				
AC % Ind			.000	-1.958**				
AC % Fin Exp			.000	.828				
ACE1					-.010	-2.405***		
ACE2							-.007	-1.927**
F Test	4.915***		4.842***		5.132***		5.038***	
Adjusted R^2	.147		.144		.140		.137	
N	691		691		691		691	

Definitions of variables

Dependent variable: earnings quality measured using Francis et al. (2005) model[36]

Independent variables: Big4 = dummy variable indicating instances where the audit was carried out by a Big4 audit firm; Log Delay = the natural logarithm of audit delay; Log Total Assets = the natural logarithm of total assets; % Gearing = percentage of total long-term finance represented by long term debt; ROA = return on assets; CFO = cash flow from operations; Loss = dummy variable representing the firm incurring loss in last two years; % Block Own = percentage of equity owned by the block holders; Board Ind dummy = dummy variable indicating instances where boards comprised of majority independent directors; Board meetings = the number of meetings held by the board during the year; AC % Share own = percentage of equity held by audit committee members; AC Ave Directorships = average directorships held by the audit committee members; AC Size dummy = dummy variable indicating instances where the audit committee contains three or more members; AC Meetings dummy = dummy variable indicating instances where the audit committee held at least three meetings; AC Ind dummy = dummy variable indicating instances where the audit committee had solely independent non-executive directors; AC Fin Exp dummy = dummy variable indicating instances where the audit committees had financial expertise; AC Size = number of audit committee members; AC Meetings = Number of audit committee meetings held during the year; AC % Ind = Percentage of audit committee members who are independent non-executive directors; AC % Fin Exp = Percentage of audit committee members who are financial experts; ACE1 = dummy variable representing instances where audit committees comprise at least three members, contained at least one financial expert, all members being independent and met at least three times during the financial year; ACE2 = dummy variable representing instances where audit committees comprise at least three members, contained at least one financial expert, all members being independent and met at least three times during the financial year, contains one accounting expert and has no member with more than 9 years tenure.

[36] Francis *et al.,* (2005) separates McNichols (2002) measure of earnings management into its discretionary and non-discretionary elements. Francis *et al.,* (2005) compute the components of accruals (i.e. both discretionary and non-discretionary) by estimating a regression of firms' innate factors affecting accruals quality. To determine the discretionary components of accruals quality, the regression equation will be as follows;

$AQ = \alpha + b1SIZE + b2\ LOSS + b3OPCYC + b4\sigma CFO + b5\sigma REV + e_t$ *(2)*

The residual from (2) is the estimate of the discretionary component of firm's accrual quality.

[where AQ is the accruals quality (absolute value of accruals quality from equation 1); SIZE is the natural log of total assets, ; LOSS is the number of years in which a loss was recorded for last three years; OPCYC is the natural log of average age of inventory plus the average age of receivables (in days), σCFO is the standard deviation of cash flow from operation over last five years (scaled by total assets) and σREV is the standard deviation of operating revenue over the last five years (scaled by total assets.]

None of the board variables have shown any impact on earnings management practices. As expected, in model 1 of table 5.8, where the dependent variable is the Francis measure of earnings quality the impact of audit committee independence in constraining earnings management is higher than the McNichols model and statistically significant at five per cent level. This finding suggests that independent directors are more concerned about their reputation in the market and hence more objective in their monitoring role (Fama and Jenson, 1983). This finding also highlights that independent members are much more effective in constraining the intentional manipulation of accruals. Audit committee meetings show a negative and significant impact on earnings management and the level of significance is recorded at five per cent level. The increased frequency of audit committee meetings signifies the higher level of diligence and scrutiny exercised by audit committee members and hence resulting in improved earnings quality. The equity ownership of audit committee members also has a negative and significant impact on earnings management and hence a positive impact on earnings quality. This finding shows that audit committee members with a higher level of equity ownership are more likely to perform their role in accordance with shareholders' interests (Jensen, 1993). Beasley (1996) also found a negative association between the equity ownership of outside directors and the chances of financial statement fraud. Other than these characteristics, the significant negative impact of the additional directorships held by audit committees on earnings quality suggests that overstretched directors are not very good monitors of the financial reporting process and hence result in low earnings quality.

In model 2, when the dummy variables are substituted with the absolute measures of the recommended key audit committee characteristics, the negative impact of the busyness of audit committee members on earnings quality remains significant in each regression. Consistent with the busyness hypothesis this finding suggests that directors holding other directorships may be too busy to do their job effectively and hence have a negative impact on the firms' earnings quality. Both the proportion of independent audit committee members and the percentage share ownership of audit committee members have a negative and statistically significant impact on earnings management.

The significance level of both these variables is higher in Francis model as compared to McNichols model of earnings management. This suggests that, in the case of the Francis model, greater audit committee independence and greater share ownership by audit committee members serves to better monitor the quality of financial reporting. These variables are significant at the five and ten per cent level of significance respectively and these findings are consistent with expectations.

In model 3 and 4 the researcher brings in the composite dummies representing those firms adhering to all four recommendations of best practice (ACE1) and those that comply with best practice as in ACE1 but, in addition, have no member with longer than nine years' tenure and also has at least one accounting expert (ACE2). In model 3, ACE1 has a negative impact at five and one per cent level of significance respectively. This finding is consistent with expectations in that it suggests when companies satisfy all four of the current recommendations of best practice the extent of earnings management is reduced hence the quality of financial statements is better. ACE2, although not significant in the McNichols model, has a significant negative impact in the Francis model[37]. These findings are also interesting in that they identify a consistent impact of good governance practice on earnings quality and should serve as reassuring to regulators who may interpret this finding as supportive of their recommendations.

In summary therefore, the empirical findings reported in table 5.8 find that the key ingredients of what regulators perceive as more effective audit committees are associated with higher earnings quality. The findings in relation to audit committee independence and activity are largely consistent with prior research as Lo *et al.*, (2010); Vafeas (2005); Xie *et al.*, (2003); Yang and Krishnan (2005) found a positive association between audit committee independence and earnings quality. Similarly Vafeas (2005), Koh *et al.* (2007) and Kent *et al.* (2010) reported a positive impact of audit committee meetings on earnings quality. This study however failed to find any significant

[37] Two alternative effectiveness variables (ACE3 and ACE4) representing the aggregate count of the ACE1 and ACE2 variables have a significant negative impact on earnings management suggesting that audit committees that comply with the recommended best practice are far more effective in enhancing earnings quality as compared to their counterparts.

association between the financial expertise and earnings quality as it was documented in the prior literature (Lo *et al.* 2010; Sun *et al.* 2012). The negative influence on earnings management by the audit committee members with an equity stake in their companies proves that equity stake of audit committee members makes them more effective in their oversight of the financial reporting process. The negative impact of holding external directorships on earnings quality confirms the busyness hypothesis, as these additional directorships could result in a conflict of interest if directors accept too many directorships and focus more on their own interest than on shareholder interests (Fich and Shivdasani, 2006).

The F-statistics of each model in table 5.8 is significant at one per cent level, suggesting that the models are statistically valid. The adjusted R^2 for all models ranges between 13.7 per cent and 14.7 per cent. These values although low are consistent with the prior research conducted in this area. Ghosh *et al.* 2010), Baxter and Cotter (2009) and Kent *et al.,* (2010) reported the R^2 value as 8.28 per cent, 9.8 per cent and 2.8 per cent respectively. The number of observations in each model equal 691.

5.4.4 Tests of Robustness

Similar to the McNichols model of earnings quality this study re-runs the main regression models reported in table 5.8, controlling for the clustered adjusted standard errors, and examines whether the clustering within firms may have biased the estimated standard errors which may have affected the significant levels found for the estimated coefficients. These tests show that the findings reported in the main regression analysis specifically in relation to audit committee independence, audit committee meetings, audit committee busyness and audit committee effectiveness variables hold strong and are not sensitive to this approach. In addition to this, a number of other robustness tests have also been conducted and these are discussed below.

Table 5.9 provides a thorough analysis of audit committee expertise, audit committee busyness and audit committee tenure variables and extends our understanding of the impact of these variables on earnings management. In model 1, the proportion of audit committee members with accounting expertise have been included instead of broadly defined financial expertise and in model 2 this study includes the proportion of members with non-accounting expertise. In models 3 and 4 this study utilises different variables representing the extent of holding other directorships by audit committee members: the proportion holding one or more additional directorships in model 3 and two or more additional directorships in model 4. In regressions model 5 and 6 this study investigates the importance of tenure of audit committee members on earnings management by including variables representing the proportion of members with excess of nine years' tenure and the proportion of members with over six years' tenure.

The proportion of accounting financial experts[38] on the audit committee and the proportion of non-accounting financial experts have no significant impact on earnings management. The proportion of audit committee members with experience of serving on other audit committees i.e. governance experts also have no significant impact on earnings management practices (un-tabulated). In models 3 and 4 this study

[38] The dummy variable representing audit committees with at least one accounting expert also has no impact on earnings quality and the proportion of audit committee members with accounting qualification also has no impact on earnings quality.

substitutes the average number of additional directorships held by audit committee members by variables representing the proportion of audit committee members holding one or more other board seats and two or more other board seat respectively. In the Francis model, holding one or more other board seats is significant at 1 per cent level and holding two or more board seats is significant at 5 per cent. These results suggest that audit committee members with other board commitments may not be able to monitor the management of earnings with the same level of attention as those without other directorships. Consistent with the busyness hypothesis this finding suggests that directors holding other directorships may be too busy to do their job effectively and hence have a negative impact on the firms' earnings quality.

Table 5.9 (Francis et al., 2005): OLS regressions explaining the determinants of earnings quality for FTSE 350 companies between 2007 and 2010 (***, **, * denote statistical significance at 1%, 5% and 10% respectively)

	AC Expertise Variations				AC Busyness Variations				AC Tenure Variations			
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Coef	T-Value	Coef	T-Value	Coef	T-Value	Coef	T-Value	Coef	T-Value	Coef	T-Value
(Constant)	.183	3.935***	.186	4.003***	.168	3.329***	.154	3.065***	.159	3.139***	.161	3.156***
Big4	-.008	-.972	-.007	-.931	-.007	-.877	-.005	-.602	-.007	-.870	-.007	-.923
Log Delay	-.015	-.914	-.015	-.937	-.016	-.981	-.013	-.804	-.012	-.737	-.012	-.736
Log Total Assets	-.007	-2.091**	-.008	-2.131**	-.008	-2.185**	-.007	-1.959*	-.009	-2.477*	-.009	-2.525**
% Gearing	.000	.985	.000	.971	.000	1.078	.000	.727	.000	.723	.000	.738
ROA	.000	.855	.000	.860	.000	.690	.000	.878	.000	.537	.000	.555
CFO	.000	-.977	.000	-.979	.000	-.728	.000	-.875	.000	-.772	.000	-.794
Loss Dummy	-.010	-1.840*	-.009	-1.784*	-.010	-1.828*	-.010	-1.889*	-.009	-1.727*	-.009	-1.720*
% Block own	.000	.498	.000	.476	.000	.586	.000	.566	.000	.589	.000	.595
Board Ind Dummy	.004	1.004	.004	.991	.003	.908	.004	1.106	.001	.283	.001	.273
Board Meetings	.000	.259	.000	.232	.000	.289	.000	.365	.000	.290	.000	.258
AC % Share own	-.001	-1.729*	-.001	-1.784*	-.001	-1.721*	-.001	-1.810*	-.001	-1.496	-.001	-1.409
AC Ave Directorships	.010	3.141***	.011	3.189***					.011	3.202***	.011	3.161***
AC Size Dummy	.005	.771	.004	.666	.002	.271	.002	.315	.006	.966	.006	1.010
AC Meetings Dummy	-.014	-2.155**	-.014	-2.160**	-.013	-1.960**	-.014	-2.117**	-.015	-2.241**	-.015	-2.266**
AC Ind Dummy	-.012	-2.299**	-.012	-2.324**	-.013	-2.520**	-.011	-2.207**				
AC Fin Exp Dummy					.021	1.171	.024	1.351	.023.	1.256	.023	1.279
AC % Acc Exp	.000	.258										
AC % non acc exp			.000	.352								
AC % Adddirs1plus					.000	3.030***						
AC % Adddirs2plus							.000	2.066**				
AC % Tenure 9									000	.652		
AC % Tenure 6											.000	.311
Industry Dummies	Included		Included		Included		Included		Included		Included	
Year Dummies	Included		Included		Included		Included		Included		Included	
F Test	4.857***		4.859***		4.896***		4.698***		4.720***		4.706***	
Adjusted R^2	.145		.145		.146		.140		.140		.140	
N	691		691		691		691		691		691	

Definitions of variables

Dependent variable: earnings quality measured using Francis et al. (2005) model[39]

Independent variables: Big4 = dummy variable indicating instances where the audit was carried out by a Big4 audit firm; Log Delay = the natural logarithm of audit delay; Log Total Assets = the natural logarithm of total assets; % Gearing = percentage of total long-term finance represented by long term debt; ROA = return on assets; CFO = cash flow from operations; Loss = dummy variable representing the firm incurring loss in last two years; % Block Own = percentage of equity owned by the block holders; Board Ind dummy = dummy variable indicating instances where boards comprised of majority independent directors; Board meetings = the number of meetings held by the board during the year; AC % Share own = percentage of equity held by audit committee members; AC Ave Directorships = average directorships held by the audit committee members; AC Size dummy = dummy variable indicating instances where the audit committee contains three or more members; AC Meetings dummy = dummy variable indicating instances where the audit committee held at least three meetings; AC Ind dummy = dummy variable indicating instances where the audit committee had solely independent non-executive directors; AC Fin Exp dummy = dummy variable indicating instances where the audit committees had financial expertise; AC % Acc Exp = Percentage of audit committee members who are accounting experts; AC % Non Acc Exp = percentage of audit committee members who are non-accounting experts; AC % Gov Exp = percentage of audit committee members who served on the audit committee of another FTSE listed company at the same time; AC % Addir1plus = percentage of audit committee members with at least one additional directorship; AC % Addir2plus = percentage of audit committee members with at least two additional directorships; AC % Tenure 9 = percentage of audit committee members who have served on company board for more than 9 years; AC % Tenure 6 = percentage of audit committee members who have served on company board for more than 6 years.

[39] Francis *et al.,* (2005) separates McNichols (2002) measure of earnings management into its discretionary and non-discretionary elements. Francis *et al.,* (2005) compute the components of accruals (i.e. both discretionary and non-discretionary) by estimating a regression of firms' innate factors affecting accruals quality. To determine the discretionary components of accruals quality, the regression equation will be as follows;

$AQ = \alpha + b1SIZE + b2\ LOSS + b3OPCYC + b4\sigma CFO + b5\sigma REV + e_t$ *(2)*

The residual from (2) is the estimate of the discretionary component of firm's accrual quality.

[where AQ is the accruals quality (absolute value of accruals quality from equation 1); SIZE is the natural log of total assets, ; LOSS is the number of years in which a loss was recorded for last three years; OPCYC is the natural log of average age of inventory plus the average age of receivables (in days), σCFO is the standard deviation of cash flow from operation over last five years (scaled by total assets) and σREV is the standard deviation of operating revenue over the last five years (scaled by total assets.]

The regression results presented in table 5.9 provide some interesting additions to our understanding of the impact of a variety of audit committee expertise and holding of multiple directorships on earnings quality in a contemporary setting. First, these findings highlight the apparent absence of a link between accounting experts (either as a continuous or dummy variable) and earnings management. This result does not support the prior evidence of the positive impact of accounting financial expertise on earnings quality (Krishnan and Visvanathan 2008). Second, findings in relation to the holding of additional directorships by the audit committee members show that these members are unable to pay adequate attention to the quality of financial statements and hence result in a high earnings management and low earnings quality. This finding shows that these additional directorships could result in a conflict of interest if directors accept too many directorships and focus more on their own interest than on shareholder interests.

It should also be noted that in regression models 1 to 6 the dummy variable representing audit committees holding at least three meetings per year has a negative and statistically significant impact on earnings management. The frequency of audit committee meetings signifies the level of diligence and scrutiny exercised by the audit committee members and hence resulting in improved earnings quality. It is also worth noting that the dummy variable representing those audit committees that are comprised only of independent non-executives also has a significant negative impact on earnings management, suggesting that completely independent audit committees are more effective in restraining earnings management. The finding is consistent with the prior research (Vafeas, 2005; Yang and Krishnan, 2005) and suggests that independent directors are more concerned about their reputation in the market and hence more objective in their monitoring role (Fama and Jenson, 1983). The regressions also show that the ownership level of audit committee members has a negative impact on earnings management, again suggesting that audit committee members with an equity stake in the company may be more diligent in their monitoring of the financial reporting process. However the insignificant finding in relation to the tenure of audit committee members is somewhat surprising as Vafeas (2003) argues that longer board service might compromise audit committee directors'

independence by bringing directors and management closer resulting in directors 'befriending' management. However this study has failed to find any significant impact of longer tenure on the quality of earnings.

The rest of the regression results for each model are mainly consistent. From the control variables, firm size represented by the log of total assets has a significant and negative impact on earnings management. This finding shows that bigger firms can afford to have better internal control mechanisms and these improved mechanisms hence result a better quality of earnings. The firms experiencing loss also have a negative and significant association with earnings management. None of the board variables have shown any impact on the earnings management practices. The F-statistics of each model are significant at one per cent level, suggesting that the models are statistically valid. The adjusted R^2 value for all models ranges between 13.6 per cent and 14.6 per cent. The number of observations in each table are 691.

The study also splits the sample into two parts based on the median of total assets as proxy of size and runs separate regressions for larger and smaller firms. Appendix D represents larger and smaller firms respectively. While analysing large firms, firm size in terms of total assets is negative and significantly associated with earnings management suggesting that larger firms have more resources to invest to enhance their internal control mechanisms and this in turn results in a better financial reporting quality. In line with prior research, the proportion of audit committee independent directors has a negative and significant impact on earnings management. The frequency of audit committee meetings also has a negative and significant impact on earnings management and hence a positive impact on earnings quality. The profound impact of independent and more diligent audit committees in constraining earnings management practices is largely consistent with prior research as Lo *et al.*, (2010); Vafeas (2005); Xie *et al.*, (2003); Yang and Krishnan (2005) found a positive association between audit committee independence and earnings quality. Similarly Vafeas (2005), Koh *et al.* (2007) and Kent *et al.* (2010) reported a positive impact of audit committee meetings on earnings quality. While analysing small firms, firms experiencing loss are negatively associated with earnings management. Audit committee average directorships are positively associated with earnings management. Consistent with busyness hypothesis this finding suggests that directors holding other directorships may be too busy to do their job effectively and hence have a negative impact on the firms' earnings quality. None of the other audit committee characteristic has any significant impact on earnings management practices in smaller firms.

F-statistics for each model suggest that the models are statistically valid. The adjusted R^2 value stands at 15.9 per cent and 20.5 per cent respectively. The skewness and kurtosis values presented earlier in the chapter indicate that some of the variables were transformed using natural logarithm in order to satisfy the normality assumption for these variables. An analysis of residuals and Q-Q plot is also conducted to test for homoscedasticity and linearity. Although the correlation values of the variables included in each of the regression model were at an acceptable level, for all regressions this study calculates the variance inflation factors (VIF) and in all cases these were significantly less than 10 (generally seen as the level of concern).

Table 5.10: Summary of Hypotheses – Earnings Quality

Hypotheses	***Findings***
H2: The number of audit committee members are positively associated with earnings quality.	*Not Supported*
H4: The proportion of audit committee members with financial expertise is positively associated with earnings quality;	*Not Supported*
H6: The proportion of independent audit committee members are positively associated with audit quality;	*Supported*
H8: The frequency of audit committee meetings is positively associated with earnings quality;	*Supported*
H10: The proportion of audit committee members with longer tenure is negatively associated with earnings quality;	*Not Supported*
H12: The proportion of equity held by audit committee members is positively associated with earnings quality.	*Supported*
H14: The busyness of the audit committee is negatively associated with earnings quality;	*Supported*
H16: The presence of an effective audit committee is positively associated with earnings quality;	*Supported*

5.5 Summary

This chapter investigates the impact of various audit committee characteristics on earnings quality represented by McNichols (2002) and Francis et al., (2005) models. The chapter begins by presenting the descriptive statistics; firstly for the whole sample and then an analysis of these statistics on a yearly basis and industry level. The mean (median) values of McNichols and Francis are .049 (.036) and .045 (.033) respectively illustrating a very minute difference between the two models. These results suggest that a majority of accruals estimation errors are linked to intentional or discretionary part of accruals estimation equation. The analysis also reveals a continuous increase and a large scale adherence to various UK Corporate Governance Code requirements in relation to audit committee size, independence, meetings and expertise level. 71.3 per cent of audit committees in the sample satisfy all four of the recommended characteristics and the average audit committee in the sample scores 3.66 points out of a maximum of 4. The univariate analyses show that there is no significant difference in the earnings quality of firms that are larger in size to those that are smaller in size. However, the univariate analyses highlight a substantial difference in the mean and

mean rank values of audit committee variables for both the larger and smaller firms. The analysis suggests that on average audit committee size, number of meetings and percentage independence is significantly higher in those firms that are larger in size as compared to those that are smaller in size. Similarly, the mean and mean rank values of companies that have full compliance with the UK Corporate Governance Code (2010) in relation to audit committee size, meetings and independence is significantly higher for larger companies than those that are small in size. The above findings highlight that larger companies are associated with higher standard of audit committee composition. Following on from this, the bivariate correlations shows that audit committees having three or more meetings and variables representing audit committee effectiveness (ACE1 and ACE3) are significantly negatively correlated with the McNichols measure of earnings management. The results show that audit committees having three or more meetings and the dummy for audit committee independence and the audit committee effectiveness variables (ACE1 and ACE3) are significantly negatively correlated with the Francis measure of earnings management. Audit committee average directorships and the proportion of audit committee members with at least one additional directorship are significantly positively correlated with the Francis measure of earnings management. Finally, the multivariate regression results are presented in order to explain the impact of various audit committee characteristics on earnings quality, represented by McNichols (2002) and Francis *et al.,* (2005) models of earnings management. In summary, the empirical findings reported highlight broadly consistent evidence that audit committees meeting three or more times and fully independent audit committees exert a significant positive impact on the quality of reported earnings. These findings suggest that independent and more diligent audit committees are better able to constrain earnings management practices than their counterparts. This study also finds that the level of ownership of audit committee members also exerts a positive impact on the quality of reported earnings, highlighting the fact that audit committee members with an equity stake in their companies are considered more effective in their oversight of the financial reporting process. On the other hand, this study finds evidence that the busyness of audit committee members has a significant negative impact on the quality of reported earnings. Consistent with busyness hypothesis this finding suggests that directors holding other directorships

may be too busy to do their job effectively and hence have a negative impact on the firms' earnings quality. The study has failed to find other key characteristics of audit committees having an impact on the quality of reported earnings, for example size and the extent of financial expertise. In spite of this, the study finds composite variables (i.e. ACE1, ACE2, ACE3 and ACE4) representing those companies that satisfy all aspects of current best practice in terms of audit committee composition and operation, has a positive impact on the quality of reported earnings.

CHAPTER 6: CONCLUSIONS

The past two decades have witnessed a renewed focus on the governance of companies, motivated largely by a number of high-profile corporate failures, many subsequently found to possess either weak or non-existent governance structures. The almost universal response has been the introduction of stronger governance recommendations in the hope that these changes will serve both to prevent unacceptable behaviour and increase the external transparency of what companies do and how they do it. Audit committees have been identified as a powerful source for improvement in corporate governance. In the UK, Cadbury (1992) argued that appropriately structured audit committees have the potential to improve both the quality of companies' financial reporting, as well as ensuring the independence of the statutory external audit. Subsequent governance reports have sought to build on this by introducing further refinements focusing on audit committee composition, independence and expertise (Smith, 2003; UK Corporate Governance Code, 2010). This has resulted, not only in audit committees becoming a 'comply or explain' obligation for all listed companies in the UK, but also being subject to ongoing scrutiny into the potential for certain characteristics to impact corporate decision-making and behaviour.

This study firstly sets out to investigate the impact of a range of audit committee characteristics on audit fees and non-audit fee ratio by a sample of UK listed companies, specifically firms from the FTSE-350. Secondly, this study investigates the impact of selected audit committee characteristics on the quality of reported earnings for FTSE-350 companies. This study covers the period 2007 to 2010 and therefore offers a contemporary analysis of the influence of audit committee characteristics. This study draws on both the established literature on the determinants of audit fees as well as the emerging literature on the impact of audit committee governance on audit fees. The study investigates the impact of audit committee size, independence, diligence, expertise, share ownership and busyness on the financial reporting quality. Furthermore, this study utilises alternative measures of both independence and

expertise as well as new composite measures of audit committee effectiveness and investigate whether it influences financial reporting quality.

The first empirical analysis shows that audit fees in the UK continue to be largely determined by client size, complexity, risk, the use of London-based auditors and the level of non-audit services simultaneously provided by the auditor. In terms of audit committee characteristics, the findings show that many audit committee characteristics have an impact on audit fees. Specifically, this study finds that most aspects of current recommended best practice in respect of audit committee governance exert a positive impact on audit fees. The results show that audit fees are influenced by the actual number of meetings as well as having a minimum number of meetings (as currently recommended). This study finds no evidence that audit fees are influenced by the degree of independence more so than the existence of fully independent committees. Both the presence of financial experts and the proportion of financial experts on the audit committee exert a significant positive impact on audit fees. Investigating expertise further, this study finds no support for the notion that accounting expertise influence audit fees, however a significant positive influence on audit fees is recorded for the non-accounting financial expertise. The composite variables representing those companies that satisfy all aspects of current best practice in terms of audit committee composition and operation has a positive correlation with audit fees however the level of impact is statistically insignificant. This study also investigates the influence of equity ownership, governance expertise and holding of additional directorships on audit fees. The study finds that equity ownership has no significant impact audit fees however the holding of additional directorships has a significant negative impact on audit fees, supporting the busyness hypothesis. The governance expertise of audit committee members i.e. the experience of serving on another audit committee although positively correlated have no significant impact on the audit fees.

The analysis of the impact of audit committee characteristics on the purchase of higher non-audit services in relation to audit fees shows that these services are largely determined by client financial health and the proportion of equity held by the external

block holders. The multivariate analysis in relation to audit committees and auditor independence further shows that audit committee members' financial expertise has a negative and significant impact on non-audit fee ratio suggesting a strong support of members with financial expertise on issues relating to auditor independence. The study also documents that audit committee members serving longer on the boards do not prefer to purchase high amount of non-audit services from the incumbent auditor. This study also records a significant positive impact of the holding of additional directorships on the provision of non-audit to audit fee ratio signifying a profound support for the busyness hypothesis that argues that overstretched directors are not very good monitors of the financial reporting quality. The composite variables representing those companies that satisfy all aspects of current best practice in terms of audit committee composition and operation have not shown any significant impact on the provision of non-audit fees.

The findings of the second empirical analysis suggest that audit committee characteristics do influence the quality of reported earnings. Specifically, this study finds broadly consistent evidence that audit committees meeting three or more times per year and fully independent audit committees exert a significant positive impact on the quality of reported earnings. This study also finds some evidence (depending on the earnings model used) that the level of ownership of audit committee members also exerts a positive impact on the quality of reported earnings, highlighting the fact that audit committee members with an equity stake in their companies are considered more effective in their oversight of the financial reporting process. On the other hand, this study finds evidence that the busyness of audit committee members (busyness defined in terms of the holding of board seats in other companies) has a significant negative impact on the quality of reported earnings. This finding is consistent with the argument that holding of additional directorships result in a conflict of interest if directors accept too many directorships and focus more on their own interests than on stakeholder interests (Fich and Shivdasani, 2006). The study has failed to find other key characteristics of audit committees having an impact on the quality of reported earnings, for example size and the extent of financial expertise. In spite of this, the study finds composite variables (i.e. ACE1, ACE2, ACE3 and ACE4) representing those

companies that satisfy all aspects of current best practice in terms of audit committee composition and operation, has a positive impact on the quality of reported earnings.

6.1 Further Research Avenues

From a public policy perspective these findings should provide comfort to governance regulators as the positive impact of a range of audit committee characteristics on the quality of external audit and earnings quality could be interpreted as representing evidence of better financial reporting quality. Of course what this analysis cannot show is exactly why this positive relationship exists. Further research could usefully explore whether more effective audit committees really encourage more extensive audits or whether their presence, and the buffer they represent between company management and auditors and management, merely facilitates auditors to do their audit as thoroughly as they would wish. Further questions raised by this study include; to what extent do audit committees simply transfer their monitoring responsibilities to auditors and the extent to which improved governance characteristics facilitate this? In a related vein, it seems rather peculiar that there is growing evidence that financial expertise actually leads to more audit work, at least as reflected by higher fees. It could be countered that more effective audit committees should result in less need for intensive audits and consequently lower fees. The findings in this study raise the question on what greater expertise actually means in the context of audit committees and why does it seem to increase rather than decrease audit fees? All this suggests much more qualitative research needs to be undertaken in order to really understand what underlies the relationships being reporting. Like this study, existing research is almost exclusively concerned with the study of audit committees in the context of agency theory. As corporate governance is now seen to embody a broad range of theoretical paradigms, research in this field should also reflect this.

Expanding future research to analyse audit committees in a wider governance role, such as acknowledging their broader social responsibility role and their relevance to stakeholders other than shareholders, would tie in better with current expectations of governance oriented research as well as the broader user expectations of corporate financial reporting. Governance regulators (Higgs Report 2003; Smith Committee 2003)

point out that the performance of board sub-committee members depends as much on their individual behaviour and relationships as on recommended guidance (Spira and Bender 2004). Turley and Zaman (2007, p. 765) also highlight the importance of informal networks of audit committee members by stating that 'the most significant effects of the audit committee on governance outcomes occur outside the formal structure and processes'.

More qualitative research methods may also help shed light on concerns raised by Spira (1999) regarding the ceremonial role of audit committees, which still seem to exist in the post-governance reform period. For example, in a recent qualitative study, Fearnley *et al*., (2011), reporting on the discussions between the chief financial officer, audit partners and audit committee on financial statement issues, stated that 41.0% did not involve the audit committee and 35.0% did not involve either the audit committee or the audit committee chair. These findings appear to indicate that neither the audit committee nor the audit committee chair is fully engaged in all aspects of financial reporting decision-making. Examples of research questions where a more qualitative approach might be particularly useful include: How do audit committee members decide on the continuation or change of the external auditor?; How do audit committee members decide on the balance between audit and non-audit work for external auditors, and at what point do they believe independence of the audit might be impaired? How are audit and non-audit fee negotiations undertaken between the audit committee and the auditor? What factors influence audit committee members in deciding the extent and scope of the audit?

6.2 Research Limitations

There are a number of limitations that need to be considered before the findings of this study are generalized. Firstly, due to the ease of data availability the focus of this research was on FTSE 350 firms listed on the London Stock Exchange. Therefore, the implications of generalizing the findings of this study to non FTSE 350 may need to be considered. Secondly, this study investigates the impact of audit committees on financial reporting quality using a number of audit committee characteristics and

various constructs of financial reporting quality[40]. The process of quantifying these constructs also needs to be taken into consideration when generalizing the findings of this study. For example, higher audit quality in terms of higher audit fee assumes that more expensive and hence more extensive audit consequently results in a better quality audit (O'Sullivan, 2000; Abbott et al., 2003; Zaman et al., 2011). Another weakness of using this measure is that some of the prior literature also shows that lower audit fees could also be associated with a perceived higher audit quality. These studies assume that the auditor sees those firms with strong governance systems as lower risk firms and therefore reduce the audit effort and consequently their audit fee (Tsui et al., 2001; Boo and Sharma, 2008). It is also worth noting that some researchers have utilised different proxies to measure audit effort, e.g. Caramanis and Lennox (2008) have used audit hours in order to test the effect of audit effort. However there seems to be a strong link between audit hours and audit fees as Deis and Giroux (1996) suggest that audit fees and audit hour are significantly related to audit quality. Therefore it can be said that more audit hours will lead to higher audit fees and consequently result in a higher quality audit.

In the same vein auditor independence is a very elusive and intangible concept and as a result the constructs of independence are equally as difficult to find. The use of non audit services fee as a proxy for auditor independence is based on the argument that the purchase of non audit services from the incumbent auditor creates reliance and dependence on the auditor and hence damages auditor independence. It is argued that a higher non-audit to audit fee ratio shortens the distance between the management and the auditor which can then impair auditor independence and hence results in a lower quality audit (Zaman *et al.,* 2011). However on the other side, several studies suggest that the joint provision of audit and non audit services are beneficial in many ways and promote auditor independence through economies of scope and by providing more economic power to the auditor (Simunic, 1984; Wallman, 1996; Goldman and Barlev, 1974). Although Beattie and Fearnly (2002) argue that there is very little support for the view that joint provision of audit and non audit services impairs independence, they also agree that joint provision adversely affects the

[40] This study does not consider any of these measures as less or more important than the others.

perception of independence; hence the ratio of non-audit fees to audit fees can be regarded as a measure of perceived independence of the auditor. It is therefore important to bear in mind the assumptions and limitations of the non audit fee ratio as a measure of auditor independence when generalising the findings of this study.

Similarly, the accruals based measure of earnings quality is not the only way to capture earnings quality. Prior research has discussed a number of measures to capture earnings quality. These have been categorised as those derived from: "(1) the time-series properties of earnings; (2) selected qualitative characteristics in the FASB's Conceptual Framework; (3) the relations among income, cash and accruals; and (4) implementation decisions" (Schipper and Vincent 2003, p 99). Prior research has used a number of measures to capture earnings quality i.e. accruals based measures, the Penman and Zhang score and transfer pricing manipulations. Within accruals based measures there are a number of different accruals based models (e.g. Jones (1991) and its variants; Dechow and Dichev (2002) and its variants) to capture any manipulation in the reported numbers. This study uses the McNichols (2002) approach and its variant the Francis *et al.,* (2005) model to measure earnings quality. Therefore, these points should be considered when generalizing the findings of this study.

Finally, this study relies heavily on the information available in annual financial reports and on various databases, however the nature of desk research can prohibit an understanding of the actual working of the audit committees. While these limitations are acknowledged, they do not detract from the strengths of this research and the importance of its findings. The limitations merely provide platforms for future research, some of which are discussed in the above section.

APPENDICES

Appendix A: OLS regressions explaining the determinants of audit fees for FTSE 350 companies between 2007 and 2010 (***, **, * denote statistical significance at 1%, 5% and 10% respectively)

	Large Firms		Small Firms	
	Coef	T-Value	Coef	T-Value
Constant	1.317	2.823***	-1.339	-3.092***
Log Total Assets	.461	13.268***	.648	13.750***
Log Subs	.161	4.340***	.177	5.393***
US Subs Dummy	.130	4.138***	.120	4.580***
% Debtors	.009	7.448***	.005	5.673***
% Stock	-.003	-3.525***	-.001	-.744
Log Delay	-.118	-.871	.361	3.712***
ROA	.002	1.700*	.003	2.954***
% Gearing	-.002	-1.458	.000	-.095
Loss	.122	3.045***	-.004	-.115
London	.135	4.929***	.108	4.934***
Big 4	-.375	-2.939***	.080	1.800
% Block own	-.002	-2.605***	.001	1.918
Log Non Audit Fee	.088	8.005***	.028	3.341***
Board Ind Dummy	.100	3.675***	.069	2.942***
Board Meetings	-.013	-2.968***	-.011	-2.933***
AC % Share own	.000	.010	-.002	-.912
AC Ave Directorships	-.033	-1.525	-.002	-.124
AC Size	.039	2.843***	-.050	-2.970***
AC Meetings	.020	1.972**	.053	5.730***
AC % Ind	.000	.029	.000	-.196
AC % Fin Exp	.001	1.801*	.001	3.107***
F Test	50.994***		35.389***	
Adjusted R^2	.733		.636	
N	496		495	

Dependent variable: the natural log of audit fee
Independent variables: Log Total Assets = the natural logarithm of total assets; Log Subs = the natural logarithm of total consolidated subsidiaries; US Subs dummy = dummy variable indicating US subsidiaries; Debtors = percentage of total assets represented by debtors; % Stock = percentage of total assets represented by stock; Log Delay = the natural logarithm of audit delay; ROA = return on assets; % Gearing = percentage of total long-term finance represented by long term debt; Loss = dummy variable representing the firm incurring loss in last two years; London = dummy variable representing firms audited by a London based auditor; Big4 = dummy variable indicating instances where the audit was carried out by a Big4 audit firm; % Block Own = percentage of equity owned by the block holders; % Log Non Audit Fee = the natural logarithm of non audit fee; Board Ind dummy = dummy variable indicating instances where boards comprised of majority independent directors; Board meetings = the number of meetings held by the board during the year; AC % Share own = percentage of equity held by audit committee members; AC Ave Directorships = average directorships held by the audit committee members; AC Size = number of audit committee members; AC Meetings = Number of audit committee meetings held during the year; AC % Ind = Percentage of audit committee members who are independent non-executive directors; AC % Fin Exp = Percentage of audit committee members who are financial experts.

Appendix B: OLS and logistic regressions explaining the determinants of non-audit fee ratio for FTSE 350 companies between 2007 and 2010 (***, **, * denote statistical significance at 1%, 5% and 10% respectively)

	Large firms		Small firms		Logit model	
	Coef	T-Value	Coef	T-Value	Coef	Wald
Constant	3.450	2.320**	-4.044	-1.689*	1.139	.533
Log Total assets	.024	.208	.574	2.114**	-.257	1.998
Log Subs	-.076	-.561	-.235	-1.215	-.579	6.016**
US Subs Dummy	-.146	-1.264	-.166	-1.090	-.212	1.264
ROA	-.007	-1.445	-.005	-.844	-.023	8.176***
% Gearing	-.002	-.485	-.005	-1.054	-.001	.019
Loss	.150	1.003	.245	1.144	.441	3.128*
London	-.019	-.184	-.117	-.881	.012	.005
Big 4	.646	1.089	.201	.699	.956	3.477*
% Block own	.005	1.741*	.005	1.219	.005	.918
Board Ind Dummy	-.050	-.494	.000	-.002	.099	.310
Board Meetings	.019	1.232	.032	1.410	.058	4.558**
AC % Share own	.055	.318	-.007	-.474	-.003	.019
AC Ave Directorship	.112	1.411	.153	1.347	.375	7.132***
AC Size	.023	.090	-.183	-.929	.158	1.570
AC Meetings	-.314	-.929	-.138	-.689	-.075	1.091
AC % Ind	-.418	-1.985**	-.035	-.193	-.003	.195
AC % Fin Exp	-2.794	-2.998***	.400	.820	-.215	4.472**
Industry Dummies	Included		Included		Included	
Year Dummies	Included		Included		Included	
F Test	2.173***		1.404*		75.315***	
Adjusted/Pseudo R^2	.055		.020		.076	
N	481		467		948	

Dependent variable: the non audit to audit fee ratio

Independent variables: Log Total Assets = the natural logarithm of total assets; Log Subs = the natural logarithm of total consolidated subsidiaries; US Subs dummy = dummy variable indicating US subsidiaries; Debtors = percentage of total assets represented by debtors; % Stock = percentage of total assets represented by stock; Log Delay = the natural logarithm of audit delay; ROA = return on assets; % Gearing = percentage of total long-term finance represented by long term debt; Loss = dummy variable representing the firm incurring loss in last two years; London = dummy variable representing firms audited by a London based auditor; Big4 = dummy variable indicating instances where the audit was carried out by a Big4 audit firm; % Block Own = percentage of equity owned by the block holders; % Log Non Audit Fee = the natural logarithm of non audit fee; Board Ind dummy = dummy variable indicating instances where boards comprised of majority independent directors; Board meetings = the number of meetings held by the board during the year; AC % Share own = percentage of equity held by audit committee members; AC Ave Directorships = average directorships held by the audit committee members; AC Size = number of audit committee members; AC Meetings = Number of audit committee meetings held during the year; AC % Ind = Percentage of audit committee members who are independent non-executive directors; AC % Fin Exp = Percentage of audit committee members who are financial experts.

Appendix C : OLS regressions examining the determinants of earnings quality for FTSE 350 companies between 2007 – 2010 (***, **, * denote statistical significance at 1%, 5% and 10% respectively)

	Large firms		Small firms	
	Coef	T-Value	Coef	T-Value
(Constant)	.350	3.881***	.063	.545
Big4	-.006	-.289	-.002	-.186
Log Delay	-.009	-.312	-.008	-.348
Log Total Assets	-.022	-2.975***	.003	.221
% Gearing	.000	-1.953*	.000	1.077
ROA	.000	.874	.000	-.460
CFO	.000	1.162	.000	.023
Loss	-.007	-.866	-.018	-2.014**
% block own	.000	-.182	.000	-.054
Board Ind Dummy	.003	.502	.008	1.338
Board Meetings	.001	.829	.002	1.886*
AC % share own	-.004	-.275	-.001	-.716
AC Ave Directorships	.004	.794	.009	1.559
AC Size	.003	.205	.006	.783
AC Meetings	-.048	-2.889***	-.017	-2.145**
AC % Ind	-.010	-1.018	-.007	-1.021
AC % Fin Exp			-.006	-.306
Industry Dummies	Included		Included	
Year Dummies	Included		Included	
F Test	2.533***		2.946***	
Adjusted R^2	.115		.146	
N	346		345	

Dependent variable: earnings quality measured using McNichols (2002) model

Independent variables: Big4 = dummy variable indicating instances where the audit was carried out by a Big4 audit firm; Log Delay = the natural logarithm of audit delay; Log Total Assets = the natural logarithm of total assets; % Gearing = percentage of total long-term finance represented by long term debt; ROA = return on assets; CFO = cash flow from operations; Loss = dummy variable representing the firm incurring loss in last two years; % Block Own = percentage of equity owned by the block holders; Board Ind dummy = dummy variable indicating instances where boards comprised of majority independent directors; Board meetings = the number of meetings held by the board during the year; AC % Share own = percentage of equity held by audit committee members; AC Ave Directorships = average directorships held by the audit committee members; AC Size = number of audit committee members; AC Meetings = Number of audit committee meetings held during the year; AC % Ind = Percentage of audit committee members who are independent non-executive directors; AC % Fin Exp = Percentage of audit committee members who are financial experts.

Appendix D: OLS regressions examining the determinants of earnings quality for FTSE 350 companies between 2007 – 2010 (***, **, * denote statistical significance at 1%, 5% and 10% respectively)

	Large Firms		Small Firms	
	Coef	T-Value	Coef	T-Value
(Constant)	.458	5.493***	.015	.142
Big4	.002	.114	-.007	-.801
Log Delay	-.030	-1.108	.003	.139
Log Total Assets	-.028	-4.128***	.005	.430
% Gearing	.000	-.707	.000	.926
ROA	.000	1.444	.000	-.040
CFO	.000	.002	.000	-.653
Loss	-.005	-.650	-.019	-2.380**
% Block own	.000	-.692	.000	.480
Board Ind Dummy	.002	.391	.000	-.083
Board Meetings	.000	-.398	.002	1.856*
AC % Share own	-.008	-.690	-.001	-1.349
AC Ave Directorships	.007	1.554	.010	1.942**
AC Size	-.004	-.357	.008	1.152
AC Meetings	-.042	-2.619***	-.010	-1.318
AC % Ind	-.021	-2.344**	-.006	-.883
AC % Fin Exp	.002	.393	.008	.413
Industry Dummies	Included		Included	
Year Dummies	Included		Included	
F Test	3.237***		4.050***	
Adjusted R^2	.159		.205	
N	346		345	

Dependent variable: earnings quality measured using Francis et al. (2005) model

Independent variables: Big4 = dummy variable indicating instances where the audit was carried out by a Big4 audit firm; Log Delay = the natural logarithm of audit delay; Log Total Assets = the natural logarithm of total assets; % Gearing = percentage of total long-term finance represented by long term debt; ROA = return on assets; CFO = cash flow from operations; Loss = dummy variable representing the firm incurring loss in last two years; % Block Own = percentage of equity owned by the block holders; Board Ind dummy = dummy variable indicating instances where boards comprised of majority independent directors; Board meetings = the number of meetings held by the board during the year; AC % Share own = percentage of equity held by audit committee members; AC Ave Directorships = average directorships held by the audit committee members; AC Size = number of audit committee members; AC Meetings = Number of audit committee meetings held during the year; AC % Ind = Percentage of audit committee members who are independent non-executive directors; AC % Fin Exp = Percentage of audit committee members who are financial experts.

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